



Università
Ca' Foscari
Venezia

Presidio della Qualità
di Ateneo

2020 Annual Research and Third Mission Report

Department of Molecular Sciences and Nanosystems

Reference period 2017-2019

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PART I: Research objectives

Section A - Statement of the Department research objectives and indicators

----- Linee guida per la compilazione

In questa sezione il Dipartimento descrive i settori di ricerca nei quali opera e gli obiettivi di ricerca pluriennali, in linea con il piano strategico di Ateneo; fornisce, inoltre, obiettivi misurabili da raggiungere l'anno successivo, tenendo conto nella formulazione di criticità e punti di miglioramento. È opportuno fare riferimento a, o riportare, estratti di documenti strategici/programmatici del dipartimento.

Web page for details

<https://www.unive.it/pag/29349/>

Department Strategic Plan

The last update to the Departmental Strategic Plan was drafted on May 2020

https://www.unive.it/pag/fileadmin/user_upload/dipartimenti/DSMN/documenti/AQ_dipartimento/piani_e_regolamenti/doc_prog/Piano_di_Sviluppo_di_Dipartimento_2019_2020.pdf

and includes a list of milestones and targets that will be commented on further below in this Section. Before doing this, and in view of the additional data on Scientific output that will be discussed in Part II Section B, it is however useful to provide a general benchmarking of the different research areas of the Department. The reason for this hinges on the difficulty of interpreting the indicators and data provided in Section B if they are not framed into a correct perspective. This will indeed be provided next using the same indicators that will be used at the single researcher level in Part II Section B.

Benchmarking with University peers.

Following up the recommendations provided by the NdV, we focus here on the benchmarking of the three research areas forming the core of the Dipartimento di Scienze Molecolari e Nanosistemi (DSMN) research, namely Chemistry, Physics and Astronomy, Biochemistry, Genetics and Molecular Biology. Few points are worth stressing before presenting these data. First, these three areas are clearly very different in sizes and traditions. While Chemistry has always been present at Ca' Foscari as one of the main driving research scientific areas ever since the establishment of a scientific part in the early 70s, both Physics and Biology only recently have started a transition from ancillary areas mainly dedicated to teaching to small but rather active research areas, fully engaged into cutting edge scientific activities. Second, we will strive to include as soon as possible the two additional emerging areas of Engineering and Mathematics that will find their full accomplishment with the completion of the project of the new course in Physical Engineering. Finally, we note that the results presented below hinge on the Scopus classification of the publications in the areas of Chemistry, Physics and Astronomy, as well as Biochemistry, Genetics and Molecular Biology, so that different universities can be compared on the basis of a common ground. This has, however, the drawback that in some of the areas outlined below -- namely Chemistry and, to a lower extent, Biochemistry Genetics and Molecular Biology, the total output partially includes publications authored by members of the other Dipartimento di Ambiente Informatica e Statistica (DAIS). Similarly, in the case of Physics and Astronomy, the

publications may also include those authored by authors in the Material Engineering area, still within the DSMN. This is however unavoidable since we are using the University affiliation, and not the single researcher names, for this benchmarking in order to be able to compare with the other University peers.

As in the 2019 Report, we have selected the University peers that are comparable with us in terms of number of students and staff, geographical location, as well as strategic plans. These are the Universities of Ferrara, Trento, Trieste, Udine and Verona.

Figure 1 reports the **total number of publications in Chemistry** during the time span 2000-2019. The point worth emphasizing is the positive trend that started in 2017 and is continuing in 2018 and 2019 likely as a result of the recent staff recruiting that has been finalized by the Department in the last three years bringing new positive energy nurturing the traditional areas already present in the Department. This was also stimulated by the negative results achieved in this area in the last VQR2011-2014 research assessments (see further below). As the total number of staff belonging to this area has been essentially unchanged (see Part II Section A), **this translated into an increase of the total number of publications per unit of staff in this area from 2.7 in 2017 to 3.39 in 2019.**

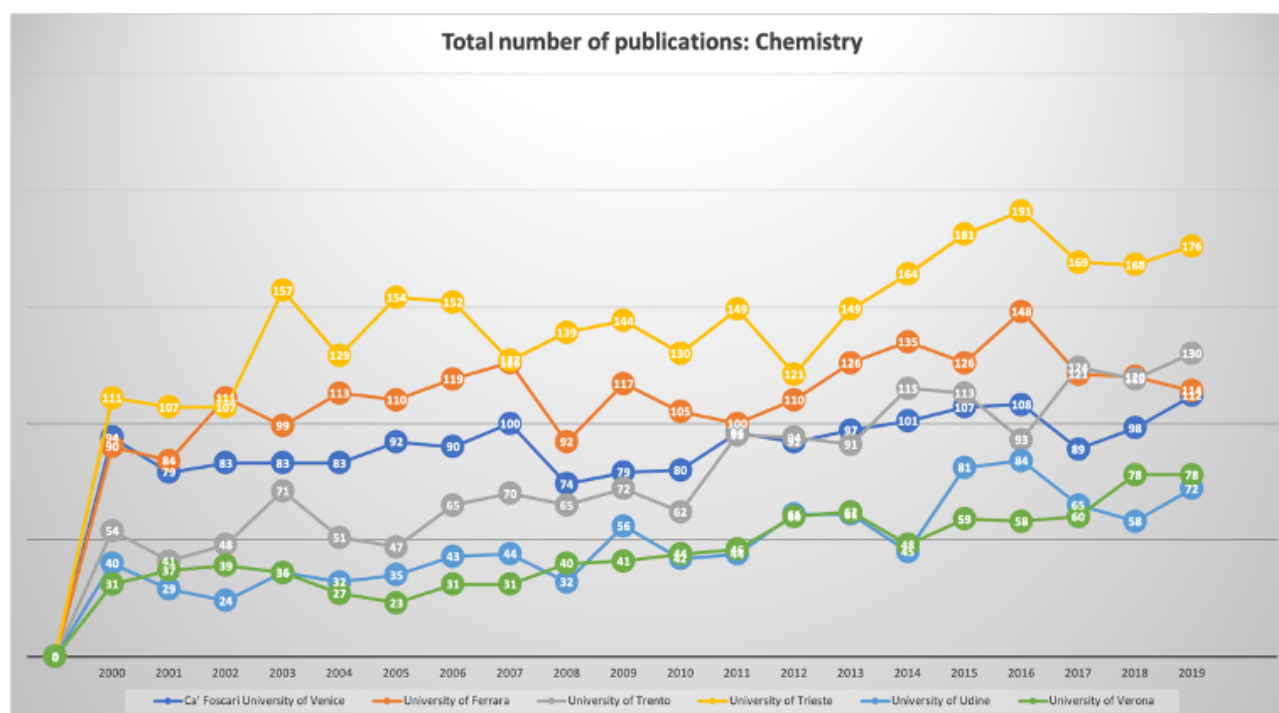


Figure 1: Comparison of the total number of publications in Chemistry in the period 2000-2019 of Ca' Foscari and the peer Universities (Ferrara, Trento, Trieste, Udine, Verona). Source SciVal (30 December 2020)

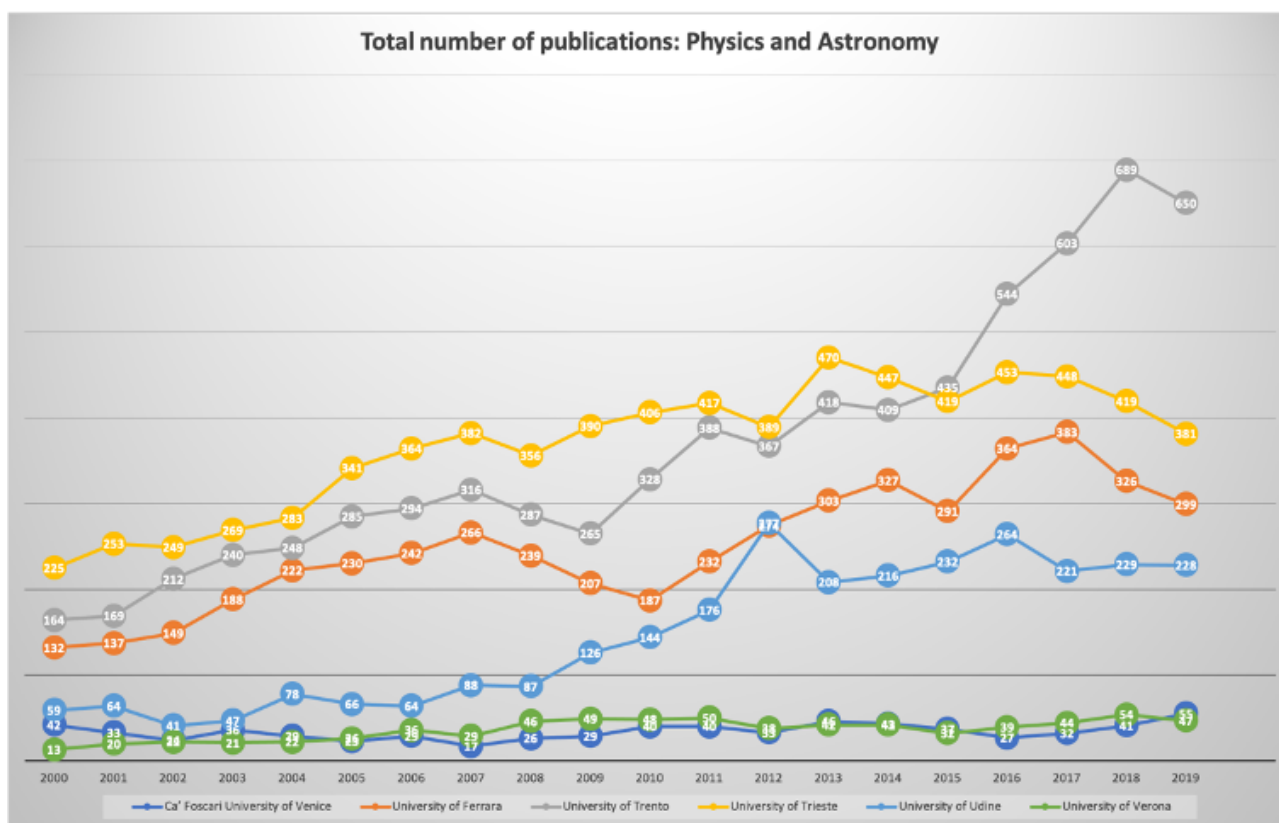


Figure 2: Comparison of the total number of publications in Physics and Astronomy in the period 2000-2019 of Ca' Foscari and the peer Universities (Ferrara, Trento, Trieste, Udine, Verona). Souce SciVal (30 December 2020)

An even better trend can be seen in the case of the **total number of publications in the area of Physics and Astronomy**, as reported in Figure 2. Here, the total number of staff has increased of one unit (from 5 in 2017 to 6 in 2018 and 2019), but the trend is rather encouraging with **an increase of the total number of publications per unit of staff from 6.40 in 2017 to 9.17 in 2019**.

This positive trend is also confirmed in the **total number of publications in the area of Biochemistry, Genetics and Molecular Biology**, as shown in Figure 3. Here the total number of staff has been steadily 3 during the period 2017-2019, thus providing **an increase of the total number of publications per unit of staff from 8 in 2017 to 18 in 2019**. Once again, this remarkable performance in absolute term might be doped by the presence of other staff people working in the area but belonging to the DAIS Department, as well as by the presence of the European Center of Living Technology (ECLT <https://www.unive.it/pag/23664/>) that is based at Ca' Foscari and involves activities in this field as well. This notwithstanding, the performance of this area remains particularly noteworthy.

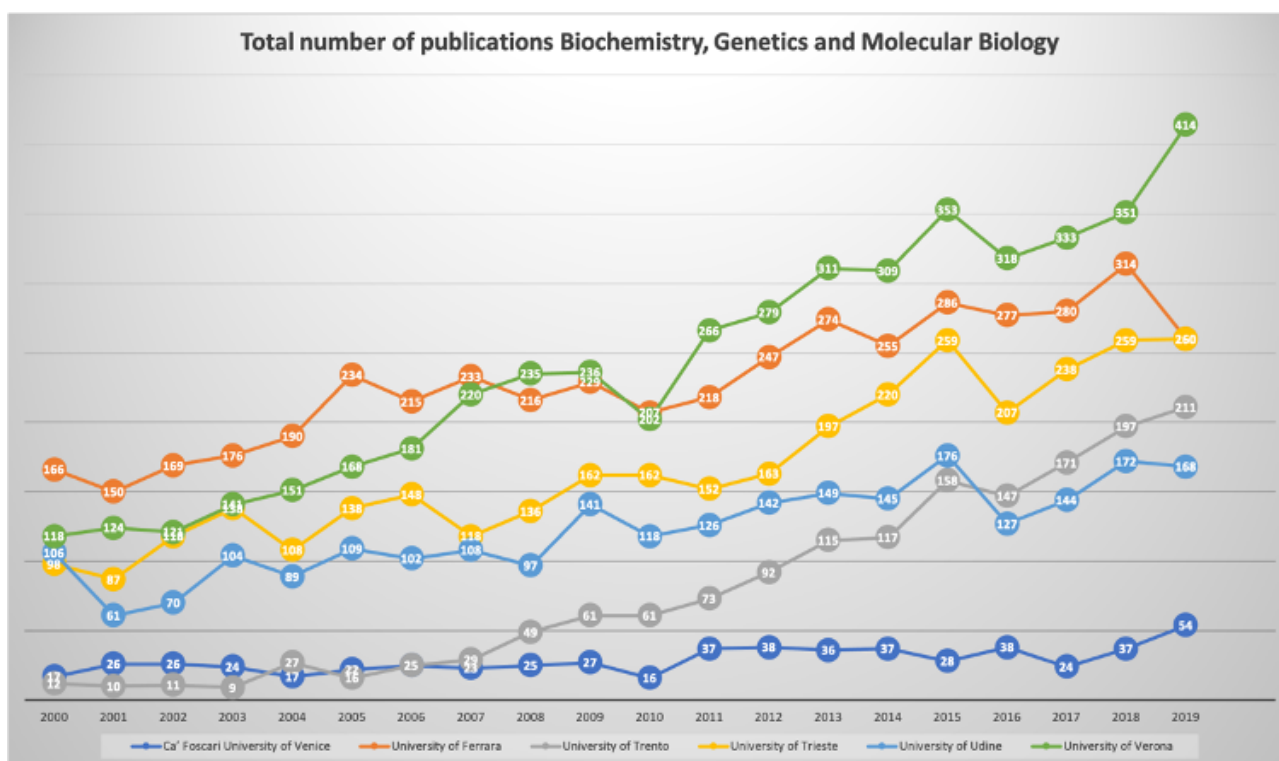


Figure 3: Comparison of the total number of publications in Biochemistry, Genetics and Molecular Biology in the period 2000-2019 of Ca' Foscari and the peer Universities (Ferrara, Trento, Trieste, Udine, Verona). Source SciVal (30 December 2020)

In parallel with the above results concerning the quantity, considerable efforts have been directed in improving the quality of the Department's scientific output. This can be inferred by using the fraction of publications in the top%10 journals according to the SNIP or SJR index

<https://www.scimagojr.com/journalrank.php?country=AU>

<https://libguides.usc.edu.au/c.php?g=508927&p=3480476>

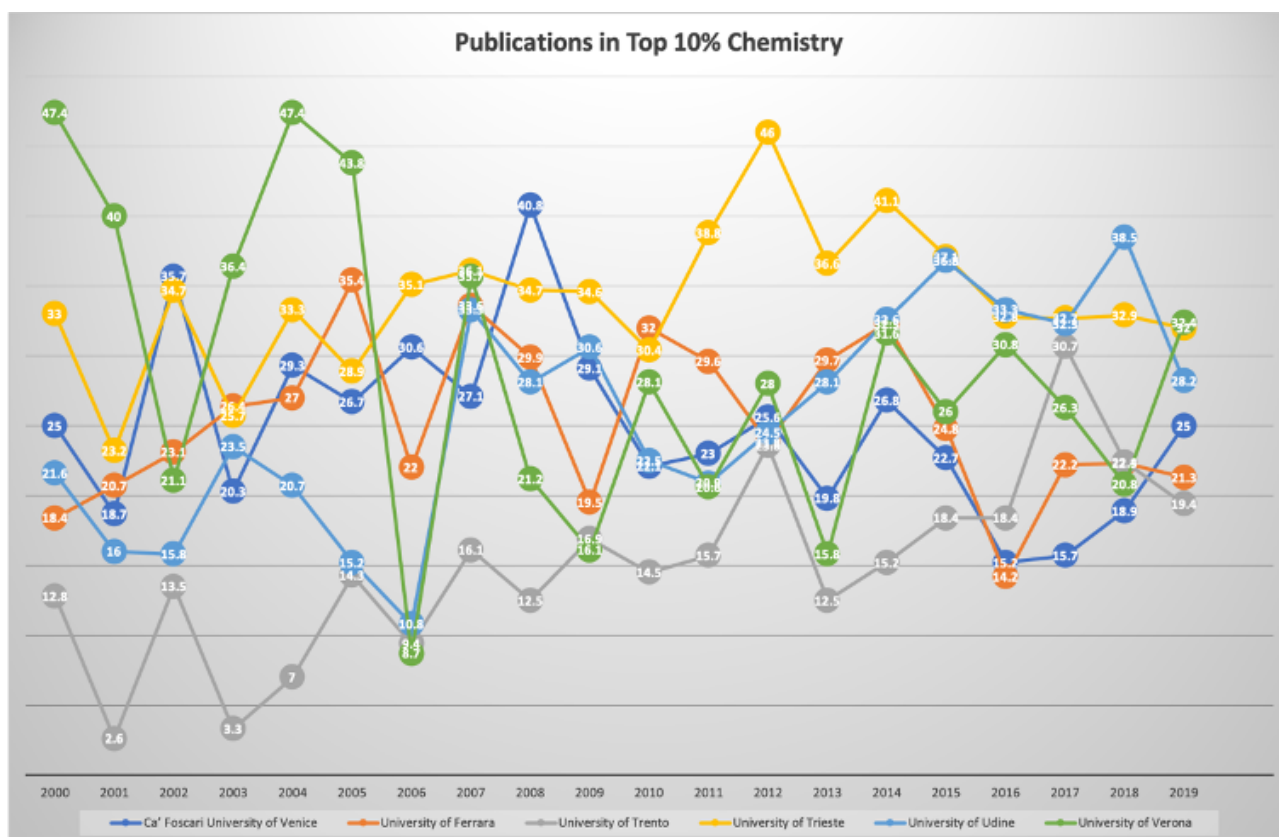


Figure 4: Comparison of the fraction of publications in top10% journals in Chemistry in the period 2000-2019 of Ca' Foscari and the peer Universities (Ferrara, Trento, Trieste, Udine, Verona). Souce SciVal (30 December 2020)

Figure 4 report **the fraction of publication in top 10% journals for the time stich 2000-2019 for Ca' Foscari in the area of Chemistry** and contrasted with the counterparts in the peer Universities. The improvement in the last three years (2017-2019) is confirmed by securing a fraction as **high as 25% in 2019 as opposed to 15.7% in 2017**.

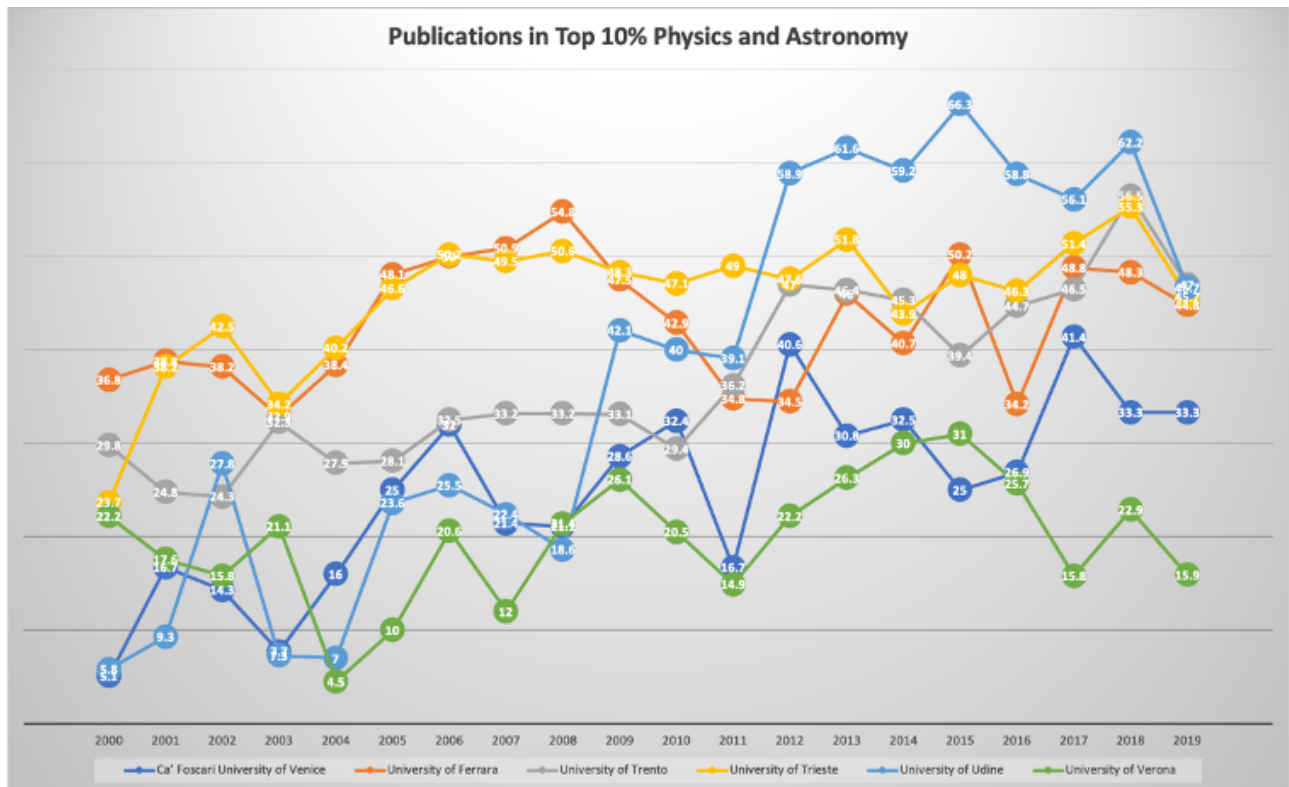


Figure 5: Comparison of the fraction of publications in top10% journals in Physics and Astronomy in the period 2000-2019 of Ca' Foscari and the peer Universities (Ferrara, Trento, Trieste, Udine, Verona). Souce SciVal (30 December 2020)

These results are confirmed by the **results in the area of Physics and Astronomy (Figure 5) with a value of 33.5% in 2019 in line with that of 2018 and in slightly decrease from the very high value of 41.4% reported in 2017**. Because of the reduced numerosity of the staff in this area (6 people), the high fluctuations present throughout the years was to be expected. Yet, it is remarkable the fact that the area is competitive with other university even in the absence of high impact disciplines such as those related to high energy physics, not present at Ca' Foscari.

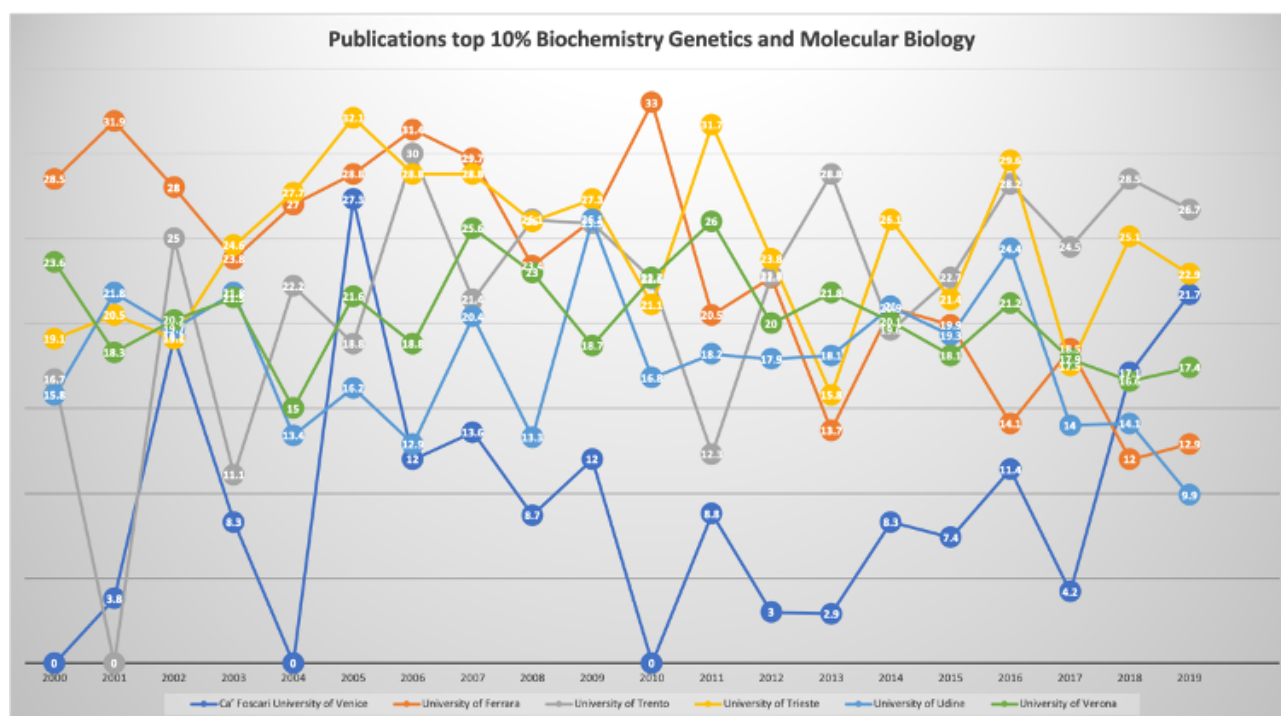


Figure 6: Comparison of the fraction of publications in top10% journals in Biochemistry Genetics and Molecular Biology in the period 2000-2019 of Ca' Foscari and the peer Universities (Ferrara, Trento, Trieste, Udine, Verona). Souce SciVal (30 December 2020)

The results provided by the area of Biochemistry, Genetics and Molecular Biology where the fraction of publications in the top 10% journals, depicted in Figure 6, support the competitive performance of this reduced but active group of 3 relatively young scientists **that boosted from a 4.2% in 2017 to 21.7% in 2019**, outperforming a significant fraction of the peer Universities.

The last point of this overview on bibliometric indicators concerns the impact of the research on the international scientific community. This is frequently assessed using the Field Weighted Citation Impact (FWCI)

https://service.elsevier.com/app/answers/detail/a_id/14894/supporthub/scopus/~/_what-is-field-weighted-citation-impact-%28fwci%29%3F/

that is the ratio of the total citations actually received by the denominator's output, and the total citations that would be expected based on the average of the subject field. As such, it is size-independent and it takes a value of exactly 1 when the output performs as expected from the global average. Hence, a value >1 strongly suggests a competitive performance whereas the opposite is true for a value < 1.

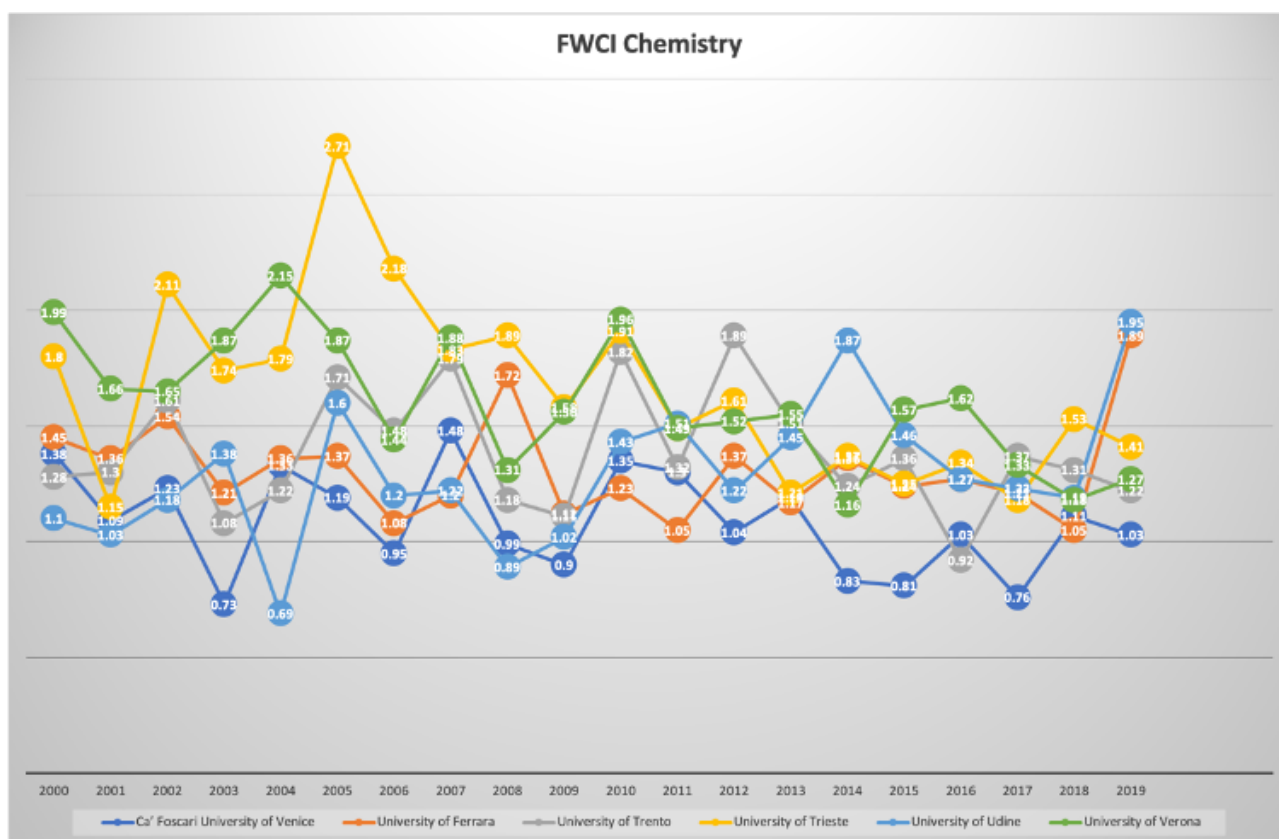


Figure 7: Comparison of the FWCI in Chemistry in the period 2000-2019 of Ca' Foscari and the peer Universities (Ferrara, Trento, Trieste, Udine, Verona). Source SciVal (30 December 2020)

Figure 7 reports the results for **Ca' Foscari Chemistry area** and the peer Universities in the time stich 2000-2019. Here we stress the fact that the citational impact is always lagging behind that of the publications, so we expect that the reflections of the improvements shown by the area of Chemistry will be visible in the near future, and it explains the resulting values around 1 that are in line with previous years. On the one hand, this is encouraging news for the upcoming VQR2015-2019 research assessment where this area performed rather poorly in the previous VQR2011-2014 research assessment. On the other hand, this is also a warning on the same VQR2015-2019 research assessment that will for sure involve a significant fraction of the final score hinging on citational impact that only in the next few years will display the present improvements in the area in full fledge.

A similar argument, albeit for different reasons, can be used to interpret the results of the FWCI in the area of **Physics and Astronomy** reported in Figure 8 for the period 2000-2019, that is widely oscillating because of the reduced number of staff members but around values nearly always significantly higher than 1, with an increasing tendency in the interesting time stich 2017-2019.

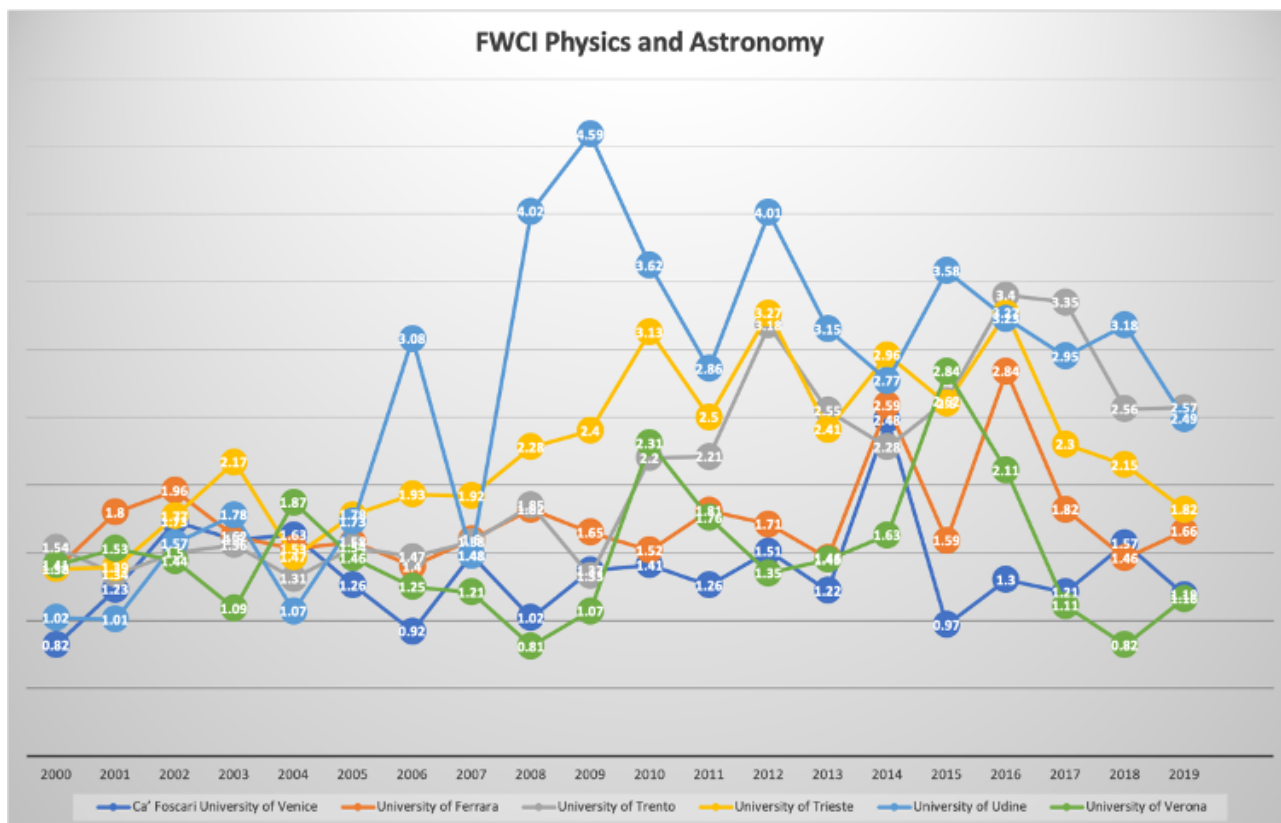


Figure 8: Comparison of the FWCI in Physics and Astronomy in the period 2000-2019 of Ca' Foscari and the peer Universities (Ferrara, Trento, Trieste, Udine, Verona). Souce SciVal (30 December 2020)

Likewise Figure 9 reports the FWCI of the **Biochemistry Genetics and Molecular Biology** Ca' Foscari area compared with its peer universities. Here there is a clear increasing trend in the last 2017-2019 period from a value below 1 (0.79 in 2017) to a value significantly higher than 1 (1.5 in 2019) clearly displaying the on-going improving trend that started with the recruitment of the next generation staff that was accomplished in 2017.

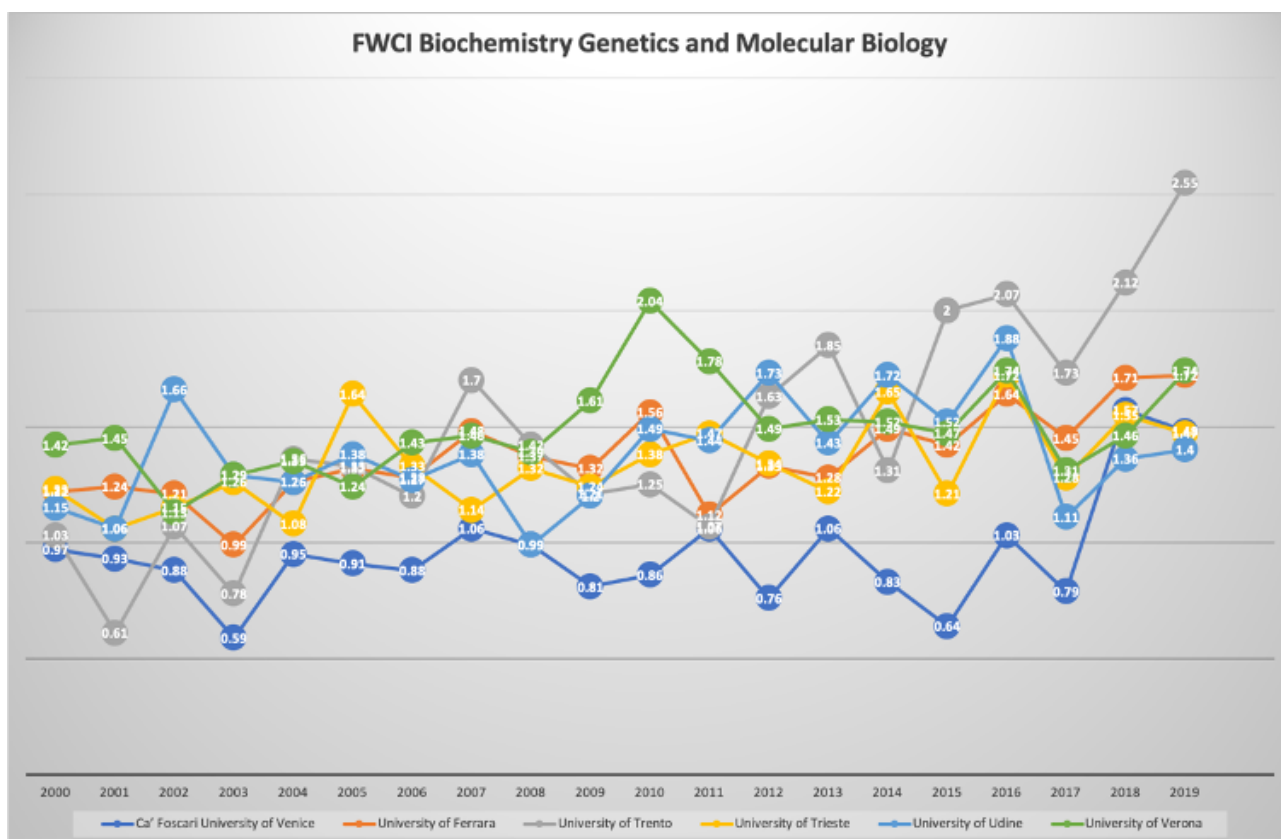


Figure 9: Comparison of the FWCI in Biochemistry Genetics and Molecular Biology in the period 2000-2019 of Ca' Foscari and the peer Universities (Ferrara, Trento, Trieste, Udine, Verona). Source SciVal (30 December 2020)

Analysis of the VQR2 (2011-2014) research assessment

As anticipated, present composition of the DSMN includes staff in the following CUN Area

Area 1 (Mathematics and Informatics)

Area 2 (Physics)

Area 3 (Chemistry)

Area 5 (Biology)

Area 9 (Industrial and Information Engineering)

whereas in the time span of the previous national research assessment (VQR2 2011-2014) Areas 1 and 9 were not present and the Department was evaluated only for Areas 2,3 and 5 with full percentage of submitted publications, 12=0.30% in Area 2, 103=1.97% in Area 3, 23=0.26% in Area 5.

The definitions of the most important parameters I, R, X, RM, and Bij can be found in the ANVUR final report

<https://www.anvur.it/attivita/vqr/vqr-2011-2014/rapporti-finale-gev-e-anvur/>

and results for our Department can be found at the link below

https://www.unive.it/pag/fileadmin/user_upload/dipartimenti/DSMN/documenti/AQ_dipartimento/indicatori/indicatori_della_ricerca_di_dipartimento/Risultati_VQR_2011-2014.pdf

	Indicator I	Indicator R	Indicator X	Indicator or R_AM	Indicator or Bij
Area 2	0.78	1.00	1.16	-	0
Area 3	0.70	0.93	0.92	0.85	2
Area 5	0.66	1.02	0.99	-	1

Table 1: VQR2 (2011-2014) results for the DSMN Department in terms of the indicators I, R, X, R_AM, Bij

Table 1 summarizes the results on these indicators. In a nutshell, **Area 2 (Physics)** performed within the average of the area but slightly worse than in the previous VQR1 assessment, **Area 3 (Chemistry)** performed less well but slightly better than in the previous VQR1 assessment, **Area 1 (Biology)** also performed within the average and along the lines of the previous VQR1 assessment.

In the case of **Area 3 (Chemistry)** there was also the additional poor performance of the newly recruited/promoted, whereas no recruitments/promotions were operated within the 2011-2014 time period. Table 2 also presents the final assessment of the Department in terms of each of the three areas.

Area	R	X
2	1.00	1.16
3	0.96	0.96
5	0.89	0.76

Table 2: VQR2 (2011-2014) assessment for the DSMN Department in terms of the indicators R, and X

IRD1	IRD2	IRD3	IRDF	n/N
0.08577	0.04317	0.03273	6.86956	9.55347

Table 3: VQR2 (2011-2014) assessment for the DSMN Department in terms of the indicators IRD1, IRD2, IRD3, IRDF, and n/N

Finally, Table 3 summarizes the final indicators of the Departmental quality that are summarized in the comparison between IRDF and n/N. In the present case we find a 28.1% negative results as $(9.55347-6.86956)/9.55347=0.281=28.1\%$ (negative).

The overall consideration of the results of the Department performance in the VQR2 2011-2014 research assessment is negative, especially in the area 3 that has been the most penalizing one. However, as argued before, the outlook for the upcoming VQR3 2015-2019 appears to be positive for all three areas.

Connection with the Strategic Plan

The last update on the Departmental Strategic Plan (May 2020) previously highlighted, included the following indicators, targets and baselines. In addition, we will highlight whether or not the targets have been met and the actions further implemented to improve the fulfilment of the targets.

European Funding

Baseline: 200,000 Euro

Target: 250,000 Euro

Outcome: Fully met. See Table Part III Section A

Action: Periodic group meetings dedicated to the new Horizon Europe

ERC-MRC

Baseline: 1 ERC

Target: 1 ERC or MCS

Outcome: A new Marie Curie Global fellowship based in our Department has been awarded in 2020.

Action: The new fellow has been integrated in the group and together with the current ERC recipient will promote further participation to both programs. The Department will also implement a scouting procedure for identifying interesting profiles abroad for both programs.

Scientific Output

Outcome: The total number of publications have increased from 167 in 2018 to 172 in 2019 , whereas the total number of publications indexed in Scopus has increased from 154 to 172 in the same period.

Action: See Part II Section B for a discussion on this point

VQR

Baseline: 0.0858 (IRD1)

Target: 0.10

Action: See discussion on Part I Section A

Webpage

https://www.unive.it/pag/fileadmin/user_upload/dipartimenti/DSMN/documenti/AQ_dipartimento/indicatori/indicatori_della_ricerca_di_dipartimento/Risultati_VQR_2011-2014.pdf

Quality of the PhD Schools

Baseline: 2.2 (R+X average)

Target: 2.3 (both PhD)

Outcome: 2.6 (Chemistry), 2.3 (Bionanomaterials) 2020/2021 – 2022/2023

Action: Note that the use of R and X for evaluating PhD Boards have been discontinued by ANVUR in 2019

Webpage

https://www.unive.it/pag/fileadmin/user_upload/dipartimenti/DSMN/documenti/AQ_dipartimento/indicatori/Qualita_dottorato/Percentuale_iscritti_al_I_anno_dei_corsi_di_dottorato_laureati_in_altr_o_Ateneo.pdf

External recruitments (%)

Baseline: 45%

Target: 40%

Outcome: In 2020 2 new external recruitments and 2 internal promotions have been finalized. So the target is fully met.

Actions: The Department will pursue an internally accepted strategy to balance these two options.

PART II: Human resources and scientific production

Section A – Human resources

Subsection A.1 – Research Personnel

TAB I : FACULTY

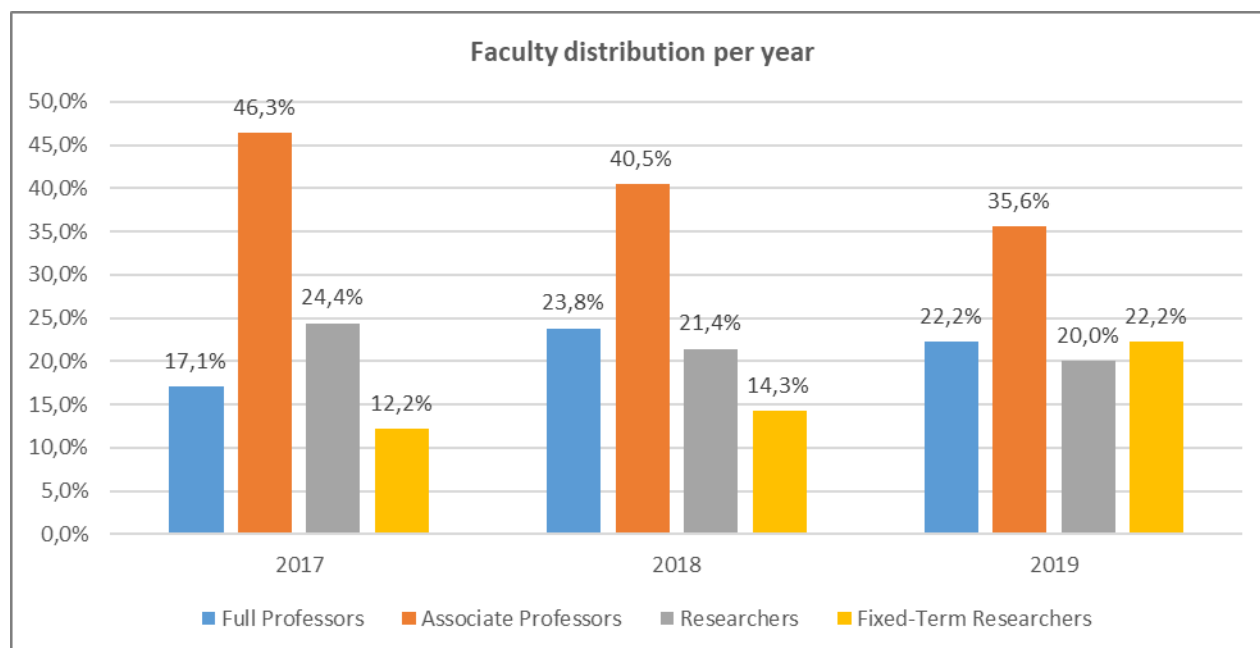
ROLE	2017	2018	2019
Full Professors	7	10	10
Associate Professors	19	17	16
Researchers	10	9	9
Fixed-Term Researchers	5	6	10
<i>TOTAL</i>	41	42	45

Detected at 31 December of every year

TAB II : RESEARCH FELLOWS AND PHD STUDENTS

ROLE	2017	2018	2019
Research fellows <i>[Assegnisti]</i>	17	12	11
PhD students	0	7	5

*Research fellowship / PhD course
starting year*



TAB III : FACULTY – DISTRIBUTION BY ACADEMIC DISCIPLINE

CUN SCIENTIFIC AREA	ITALIAN SSD - DESCRIPTION	2017	2018	2019
01 - MATHEMATICS AND INFORMATICS	MAT/05 - MATHEMATICAL ANALYSIS	-	1	2
02 - PHYSICS	FIS/01 – EXPERIMENTAL PHYSICS	3	3	3
	FIS/03 – PHYSICS OF MATTER	2	3	3
03 - CHEMISTRY	CHIM/01 - ANALYTICAL CHEMISTRY	5	6	6
	CHIM/02 - PHYSICAL CHEMISTRY	8	7	8
	CHIM/03 - GENERAL AND INORGANIC CHEMISTRY	8	6	7
	CHIM/04 - INDUSTRIAL CHEMISTRY	6	6	6
	CHIM/06 - ORGANIC CHEMISTRY	6	6	6
05 - BIOLOGY	BIO/10 – BIOCHEMISTRY	1	1	1
	BIO/11 - MOLECULAR BIOLOGY	1	1	1
	BIO/19 – MICROBIOLOGY	1	1	1
09 - INDUSTRIAL AND INFORMATION ENGINEERING	ING-IND/22 - MATERIALS SCIENCE AND TECHNOLOGY	-	1	1
	TOTAL	41	42	45

As anticipated, a significant turnover of the Faculty staff has taken place in the last 3 years, and is still ongoing as part of the Departmental strategy of rejuvenate the staff and open new fields. This is only partially captured in the data of Table I. The Department has devoted a considerable attention to the recruitment of new faculties with specific background, mostly from abroad within an international context. In particular, in the framework of the new bachelor program, ‘Physical Engineering’, and in order to increase the scientific basis of the Department, new positions (a RTD/B and a RTD/A) have been filled in two important areas such as MAT/05 - MATHEMATICAL ANALYSIS and CHIM/02 - PHYSICAL CHEMISTRY. Additional positions of RTD/B in the area CHIM/03 - GENERAL AND INORGANIC CHEMISTRY, and of of RTD/A in BIO/19 – MICROBIOLOGY and CHIM/01 - ANALYTICAL CHEMISTRY have been filled.

Additional insights can be obtained by considering the data of Table II for the Research Grant Holders (Postdocs) and the PhD students, where significant changes have occurred notwithstanding an almost constant number of both.

In 2017, the Department has launched a new international PhD programme “Science and Technology of Bio and Nanomaterials” in partnership with the Kyoto Institute of Technology (Kyoto, Japan), mostly supported by external public institutions and private companies. The Department offers also a fruitful joint PhD Program in Chemistry with Dipartimento di Scienze Chimiche e Farmaceutiche of Università di Trieste that in 2019 has become an international PhD programme thanks to the presence in the board of seven top scientists from all over the world (UK, France, Netherlands, Spain, Switzerland, Austria and Australia). The data reported in Table II about the number of PhD students account for both doctoral programmes.

As for the Post-doc, an important point worth emphasizing is the increased number of positions supported by private grants, e.g. from Companies through internal agreements.

Section B - Scientific production (2017-2019)

Subsection B.1 – Overall scientific production

This section reports the details of the analysis summarized in Figures 3-5 of Section A, regarding the scientific output of the Department. The following table illustrates the different venues selected for the scientific output, showing once again that Journal articles is the main focus of the Departmental scientific production. The total number of publications per in journals **increased from 158 in 2017 to 163 in 2019**. Also the Scopus publications **increased from 156 on 2017 to 172 in 2019**, thus in line with the results of the benchmarking exercise presented in Part I Section A.

TAB IV : TOTAL SCIENTIFIC PRODUCTION¹

ARCA CLASSIFICATION	2017	2018	2019	TOTAL
Books	0	1	0	1
Journal articles	158	160	163	481
Book parts	7	4	4	15
Conference proceedings	6	1	5	12
Book editing activities	0	1	0	1
TOTAL	171	167	172	510

¹ Source: [University Repository ARCA](#). Only publications with an ISBN/ISSN code have been considered. Conferences abstracts and posters have been **excluded** from the count of Conference Proceedings. Date of recognition: 18.09.2020; Faculty detected at 31.12.2019.

TAB V : DEPARTMENTAL SCIENTIFIC PRODUCTION DETAILS

	2017	2018	2019	TOTAL
Scopus publications ²	156	154	172	482
Articles in ANVUR “Class A” Journals ³	<i>Not applicable</i>	<i>Not applicable</i>	<i>Not applicable</i>	<i>Not applicable</i>
Publications in English ⁴	150	151	147	448

OTHER INDICATORS CONSIDERED BY THE DEPARTMENT (OPTIONAL)

The Department, in accordance with already established rules, will continue to adopt the criteria defined by the International scientific community for the evaluation of the research, taking into account the bibliometric sectors (only articles indexed in Web of Science (WoS)/Scopus databases). In particular the number of articles published per year, the Journals’ quality considering the impact factor parameter, IF (belonging to the first decile of each subject category), the number of total citations of the published articles and Hirsch index (h index) are all periodically monitored and evaluated.

As alluded previously, a total of 172 indexed publications per year has been achieved, with a significant percentage of them being in the Top 10% Journals (Scientific Journal Rankings, Top 10 SJR%).

Indeed, the major goal of at least 100 publications with 30% in the Top 10 SJR% (see Section I Part A) has been successfully achieved, with 64 publications out of 172 falling within this category, corresponding to the 37% of the overall scientific production. Moreover, such a percentage has increased with respect to the previous years.

As essentially the whole scientific production of the Department is indexed in the main international databases, indicators such as the percentage of articles registered on WoS and Scopus make little sense in this context. The Department is aiming to further increase the total number of publications, while at the same time striving to improve the quality of the scientific products and also carefully considering the type of Journals to publish in, selecting those with a higher impact factor.

An indicator used to monitor and incentive the number and quality of publications and which takes the above parameters into account is the internal funding that the Department allocates annually for research, ADIR -- for the details see also the ADIR guidelines

https://www.unive.it/pag/fileadmin/user_upload/dipartimenti/DSMN/documenti/AQ_dipartimento/piani_e_regolamenti/ADIR/Criteri_ADIR_2018.pdf

² Source: **Scopus**, all document type.

³ Source: **ARCA**. Articles inclusion in “Class A” Journal depends from the Academic Recruitment Field of the authors.

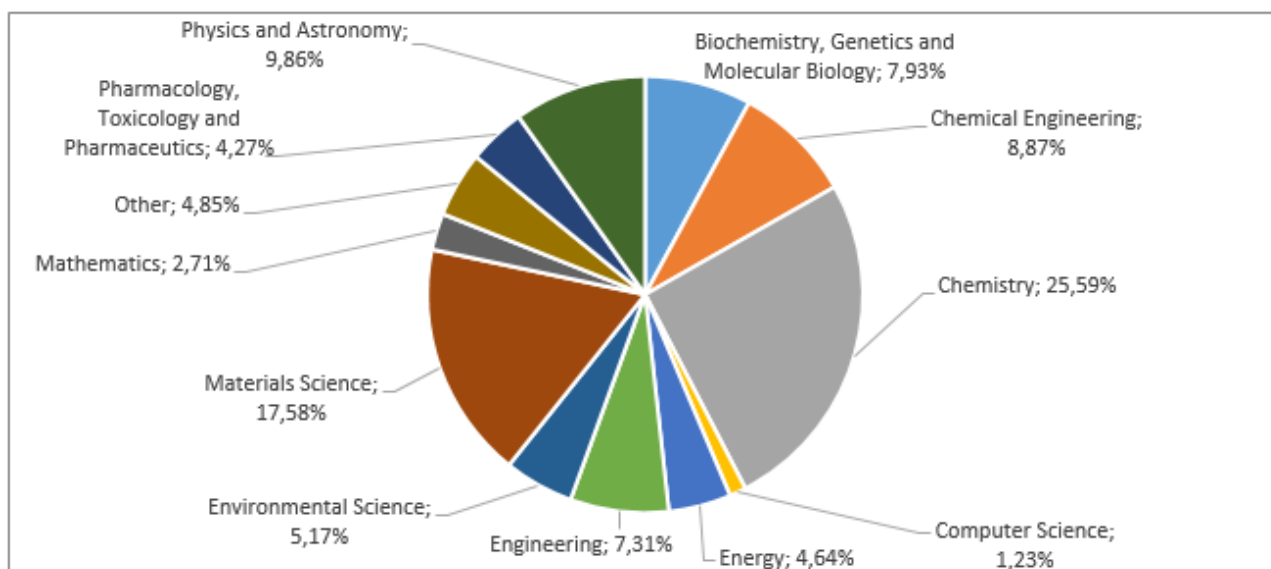
⁴ Source: **ARCA**.

Among the criteria for access to the ADIR funds, a minimum number of publications of 3 and a maximum of 15 in the three-years period of reference has been proposed. The publications, most of which are assessed with a bibliometric method and indexed on either WoS or Scopus databases, are divided into 10 classes (deciles) per subject category that takes into account the average impact factor over 5 years, and each of these classes is associated with a percentage score. A score is assigned to each bibliographic repertoire: the maximum score, obtained from the sum of bibliometric and non-bibliometric products per researcher, is 1500 points. This algorithm is parameterized so that more productive researchers are supported more than less productive ones. This strategy appears to be rewarding: the number of pro-capite publications has been increasing over the years, both in absolute terms and in terms of the fraction of peer-reviewed publications indexed in either Scopus or WoS. This ensures that these funds are invested on Faculty members who guarantee an optimal return in terms of publications and patents. A specific strategy to help and stimulate low-performing Departmental members has also been implemented, by teaming them up with more productive groups. Additional identified indicators hinge on performance of the new recruited Faculty staff and the number of publications related to the new interdisciplinary research lines. The Department Research Committee periodically monitors the scientific publications of all the Department members, proposing improvement solutions to increase their quality. In particular, work is being undertaken to monitor publications in view of the new “Valutazione della Qualità della Ricerca” (VQR3), which will focus on the 2015-2019 period.

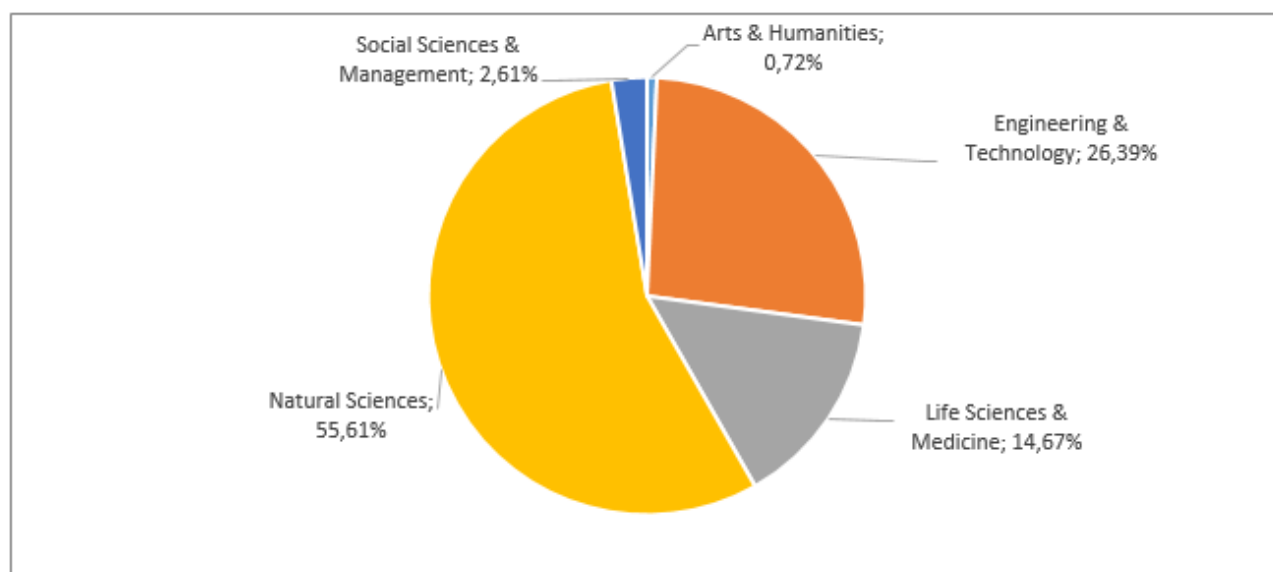
Subsection B.2 - Overall Research output by Subject Area and Collaboration

By SciVal – Overview module. All document type. Faculty detected at 31.12.2019

ASJC Subject Category distribution 2017-2019

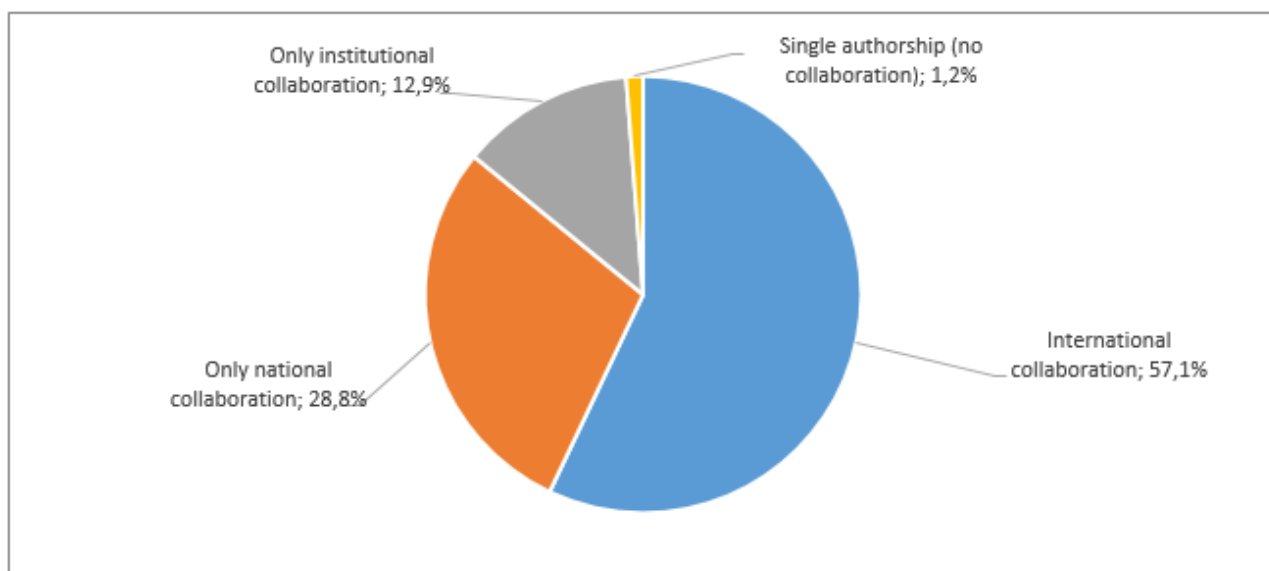


QS Subject Category distribution 2017-2019



TAB VI : Scopus scholarly output by amounts of international, national and institutional collaboration

Collaboration	%	Scholarly Output 2017-2019	Citations	Citations per Publication	Field-Weighted Citation Impact
International	57.1%	275	2712	9,9	1,43
Only national	28.8%	139	911	6,6	0,87
Only institutional	12.9%	62	300	4,8	0,91
Single authorship	1.2%	6	17	2,8	0,43



Subsection B.3 – Bibliometric analysis by Faculty role

By SciVal – Benchmarking Module. Document type: Articles; Books; Book chapters; Conference papers; Reviews

Faculty detected at: 31.12.2019

TAB VII : Scientific production: three-year period 2017-2019

	In staff	In Scopus	Scopus scholarly output	Citation count	Citation per publication	FWCI (2016-2018)	Top 10 citation percentile (%)	Top 10 CiteScore (%)	Top 10 SJR (%)	Top 10 Snip (%)
Full Professors	10	10	175	1689	9.7	1.25	31.4	55.3	47.8	20.8
Associate Professors	16	16	196	1662	8.5	1.17	27.6	37.4	33.3	15.1
Researchers	9	9	87	486	5.6	1.15	20.7	24.1	20.3	6.3
Fixed-Term Researchers	10	10	109	890	8.2	1.06	27.5	48.5	47.5	22.4
OVERALL	45	45	470	3927	8.4	1.19	27	42.4	37.8	18.1

Faculty detected at: 31.12.2019

TAB VIII : Scientific production: 2019

FACULTY	In staff	In Scopus	Scopus scholarly output	Citation count	Citation per publication	FWCI	Top 10 citation percentile (%)	Top 10 CiteScore (%)	Top 10 SJR (%)	Top 10 Snip (%)
Full Professors	10	10	75	416	5.5	1.28	34.7	50.7	46.3	19.4
Associate Professors	16	16	68	290	4.3	1.13	27.9	38.1	33.3	15
Researchers	9	9	30	107	3.6	1.03	23.3	27.6	24.1	6.9
Fixed-Term Researchers	10	10	34	115	3.4	0.97	23.5	34.4	37.5	12.5
OVERALL	45	45	169	751	4.4	1.16	27.8	40.1	37	16.9

Faculty detected at: 31.12.2018
TAB IX : Scientific production: 2018

FACULTY	In staff	In Scopus	Scopus scholarly output	Citation count	Citation per publication	FWCI	Top 10 citation percentile (%)	Top 10 CiteScore (%)	Top 10 SJR (%)	Top 10 Snip (%)
Full Professors	10	10	45	531	11.8	1.58	31.1	56.1	56.1	22
Associate Professors	17	17	69	572	8.3	1.09	27.5	40	35.6	18.3
Researchers	9	9	31	195	6.3	1.37	25.8	18.5	18.5	3.7
Fixed-Term Researchers	6	6	32	370	11.6	1.38	43.8	48.1	40.7	18.5
OVERALL	42	42	137	1214	8.9	1.3	28.5	39.8	36.9	17.9

Faculty detected at: 31.12.2017
TAB X : Scientific production: 2017

FACULTY	In staff	In Scopus	Scopus scholarly output	Citation count	Citation per publication	FWCI	Top 10 citation percentile (%)	Top 10 CiteScore (%)	Top 10 SJR (%)	Top 10 Snip (%)
Full Professors	7	7	29	334	11.5	0.99	24.1	55.2	42.9	27.6
Associate Professors	19	19	60	631	10.5	0.94	15	36.8	25	5.3
Researchers	10	10	28	217	7.8	1.07	14.3	28	16	8
Fixed-Term Researchers	5	5	17	265	15.6	1.49	47.1	43.8	43.8	18.8
OVERALL	41	41	108	1225	11.3	1.11	22.2	40.2	30.7	13.7

Subsection B.4 - Scientific production of newly recruited and promoted researchers 2017-2019

TAB XI : NEWLY RECRUITED RESEARCHERS

ENTRY ROLE AT CA' FOSCARI	Number	ARCA products ⁵	Products Indexed in Scopus ⁶	ANVUR Class A Journals
Full Professors	2	66	66	<i>Not applicable</i>
Associate Professors	1	11	18	<i>Not applicable</i>
Fixed-Term Researchers	10	112	109	<i>Not applicable</i>

TAB XII: PROMOTED RESEARCHERS

AQUIRED ROLE AT CA' FOSCARI	Number	ARCA products	Products indexed in Scopus	ANVUR Class A Journals
Full Professors	3	58	56	<i>Not applicable</i>
Associate Professors	3	52	53	<i>Not applicable</i>
Fixed-Term Researchers/Type B	0	0	0	<i>Not applicable</i>

It is possible to see in TAB XI that in this three-year period the Department has recruited 13 new researchers in all the three roles. A particular attention has been paid for young Fixed-term researchers. From the Table it is evident that all the newly recruited personnel are very active in scientific production, that is also mainly indexed in Scopus. Regarding promoted researchers (see TAB XII), both Full and Associate Professors have been recruited. It is possible to check that everyone has good scientific products.

⁵ Source: **ARCA** Repository. Only publications with an ISBN/ISSN code have been considered. Conferences abstracts and posters have been **excluded** from the count of Conference Proceedings. Date of recognition: 18.09.2020

⁶ Source: **Scopus**. Document type: Articles; Books; Book chapters; Conference papers; Reviews

NEWLY RECRUITED AND PROMOTED RESEARCHERS - BIBLIOMETRIC ANALYSIS

By SciVal – Benchmarking Module. Document type: Articles; Books; Book chapters; Conference papers; Reviews

Newly recruited researchers in the three-year period 2017-2019

TAB XIII : Scientific production: three-year period 2017-2019

FACULTY	In staff	In Scopus	Scopus scholarly output	Citation count	Citation per publication	FWCI (2016-2018)
Full Professors	2	2	66	851	12.9	1.79
Associate Professors	1	1	18	127	7.1	1.2
Fixed-Term Researchers	10	10	109	890	8.2	1.06
OVERALL	13	13	187	1804	9.6	1.32

Promoted researchers in the three-year period 2017-2019

TAB XIV : Scientific production: three-year period 2017-2019

FACULTY	In staff	In Scopus	Scopus scholarly output	Citation count	Citation per publication	FWCI (2016-2018)
Full Professors	3	3	56	361	6.4	0.88
Associate Professors	3	3	53	578	10.9	1.67
Fixed-Term Researchers (Type "B")	0	0	0	0	0	0
OVERALL	6	6	109	939	8.6	1.27

Subsection B.5 - Researchers without scientific production⁷

RESEARCHERS WITHOUT SCIENTIFIC PRODUCTION

Full Professors	Associate Professors	Researchers	Fixed-Term Researchers <i>[Ricercatori t-det]</i>
-	-	-	-

RESEARCHERS WITHOUT SCIENTIFIC PRODUCTION RECRUITED/PROMOTED IN THE THREE-YEAR PERIOD 2017-2019

Full Professors	Associate Professors	Researchers	Fixed-Term Researchers <i>[Ricercatori t-det]</i>
-	-	-	-

COMMENTS CONCERNING THE CRITICAL ISSUES OF SUBSECTION B (IN PARTICULAR WITH RESPECT TO RESEARCHERS WITHOUT SCIENTIFIC PRODUCTION)

The pro-capite productivity of DSMN researchers has increased steadily over the years, both in absolute terms and in terms of the fraction of peer-reviewed publications indexed in either Scopus or WoS, indicating that the policies for helping low-performing members (also favoured by retirements) combined with the ADIR funds on a meritocratic basis have yielded measurable positive results. In fact, it can be noticed that no Faculty members at any level (full professors, associate professors, researchers and fixed-term researchers) display a null scientific production over the three-year period 2017-19.

⁷ Researchers with no scientific publications in the three-year period (source: University Repository ARCA)

PART III: Resources, incentives, actions

Nelle sezioni e nei quadri della Parte III il Dipartimento specifica quante risorse proprie sono state dedicate alla ricerca, con quali criteri sono state distribuite, che risultati sono stati ottenuti.

Section A – Departmental research funding

Linee guida per la compilazione

Indicare come sono distribuite le risorse dipartimentali per la ricerca (ad esempio mettendo un link al regolamento ADIR), quali sono stati i risultati delle assegnazioni e i criteri di valutazione degli stessi.

Internal funding (ADIR)

The allocation of the internal funding (ADIR) of the Department follows an established strategy (details are in “criteri ADIR” available at <https://www.unive.it/pag/29349/>) which transposes either the general rules provided by Ca’ Foscari University and the content of part II, section B of this report. The leading principle has been based mainly on two aspects: i) members of DSMN should have available a small budget dedicated to improve the impact of their research work through additional activities including, but not limited to the promotion of international partnerships, the recruitment of qualified visiting professors and/or researchers and collaborators, and the dissemination of their results at national/international conferences; ii) allocation should reflect the research productivity of each member. To this aim, an algorithm has been designed on multiple parameters to compare the number and quality of publications of every researcher so that more productive members were better supported than others. The results of the ranking for 2017-2019 are summarized in the following Table.

Table. Data from riparto Adir 2017-2019 - DSMN

Year	Total ADIR budget (K€)	Shares (%) of the total ADIR budget/Number of recipients				Evaluated members
2019	78	3-3.5/ 10	2-2.9/ 20	<2/ 7	0/ 2	39
2018	80	3-3.5/ 15	2-2.9/ 14	<2/ 12	0/ 0	41

2017	87	3- 3.5/ 15	2- 2.9/ 12	<2/ 16	0/ 0	43
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In the reference period, the total ADIR budget (TAB) was primarily assigned as: i) 25-35% to the best-performing researchers (10-15 recipients,); ii) 28-51% to the second ranked class (12-20 recipients). Particularly, in 2019, the number of recipients in classes i-ii) was improved to 75% of total evaluated members compared to 71% and 63% in 2018 and 2017, respectively. The decrease of TAB that dropped by more than 10% from 2017 to 2019 was due to a progressive shrinkage of the total yearly operating budget (Fondo Unico di Dotazione: FUDD, see below) granted to DSMN from Ca' Foscari University: this drift is a concern for the Department sustainability.

The efficacy of this policy is consistent with data of the scientific production of DSMN (Part II Section B) which has shown an improvement for two consecutive years (2017 to 2018 and 2018 to 2019): more specifically, compared to 2018, in 2019 the number of Scopus scholarly output and the total citation counts have been remarkably increased by 25% and 29%, respectively. The total number of articles published by the department has also shown a slight increase from 160 in 2018 to 163 in 2019 (Subsection B.1); importantly, the quality of the scientific works is witnessed by the percentage (37%: subsection B.3, 2019) of the papers in the Top 10% Journals (Scientific Journal Rankings, Top 10 SJR%).

To keep on this trend, beyond stimulating the development of most productive research areas, promoting actions will be strengthened to widen the readership and increase citations of the overall set of publications of the department researchers. Particularly, through: i) sharing articles on most powerful social networks as Twitter, Facebook, LinkedIn, Mendeley; ii) setting up the DSMN-researchers profile on academic platforms as Sciprofiles, ResearchGate, Academia.edu, and Google Scholar; iii) including articles on pertinent topics of Wikipedia pages; iv) blogging most relevant publications and producing video abstracts to post on social media platforms. Researchers at DSMN will be individually encouraged to pursue and implement points i-iv). However, research advertising will be systematically supported also by dedicated personnel from the technical and administrative staff of the department.

External funding

One of the main strategic targets of DSMN outlined in the last Strategic Plan

https://www.unive.it/pag/fileadmin/user_upload/dipartimenti/DSMN/documenti/AQ_dipartimento/piani_e_regolamenti/doc_prog/Piano_di_Sviluppo_di_Dipartimento_2019_2020.pdf

is that of the improvement in the fundraising activities (Section 1.1). The Table mirrors that that was presented in the previous Annual Report 2019 and displays the detailed number of presented and approved projects. From this it is readily appreciable the positive trend both in terms of presented and approved project, with an

Table. External funding from national and international programs. The last column reports the total amount/year

(n)= number of presented projects; (n)= number of funded projects

EU/ H2020	PRIN/ SIR/FIR B	ER C	MARI E CURI E	ATENE O /SPIN	LIFE/ INTR G	FS E	RI R	MAECI GALILE O	OTHER S	TOT FINANZIA TO PER ANNO (KEuro)
2 (0)	0	0	5 (0)	10(0)	1 (1)	6 (4)	0	0	0	344
3 (0)	0	0	4 (0)	0	1 (0)	14 (6)	3 (3)	5 (1)	4 (2)	620
1 (0)	15 (2)	0	4 (0)	6 (2)	5 (1)	9 (4)	0	2 (1)	6 (0)	827
4 (0)	0	0	10 (1)	7 (2)	5 (1)	9 (7)	0	0	7 (4)	1.476

Section B – Funding for Research fellowships and Short term Research fellowships

Linee guida per la compilazione

Indicare eventuali regolamenti/criteri dipartimentali di assegnazione delle risorse per assegni di ricerca (Research fellowships) e borse di ricerca (Short term Research fellowships). Fornire ad esempio il link al regolamento considerato, descrivere quali sono stati i risultati delle assegnazioni e i criteri di valutazione degli stessi.

The Department has administrated and is currently administrating several Research Fellowships (32 assegni di ricerca) and Short term Research fellowships (10 borse di ricerca), most of which have been/are fully funded by external sources, as outlined in the Table of Subsection B.1 and Subsection B.2, respectively. Due to budget limitations, the department has co-funded only one additional Research Fellowship for two subsequent years: in this case, a minimum 30% co-funding must be provided by the group proposing the fellowship. Regardless of the funding sources, the selection of the candidates and the assessment of the research activity of recipients follow the general guidelines provided by the University. Further details are available at <https://www.unive.it/pag/9735/> and <https://www.unive.it/pag/9734/>.

Subsection B.1 – Research fellowships (assegni di ricerca)

The List of Research Fellowships awarded in the time stich 2016-2019 is reported in Annex I

Subsection B.2 – Short term Research fellowships (borse di ricerca)

Short term Research fellow	SSD (if available)	Research Topic	Funding sources
BACK MICHELE (2017) DURATA	CHI M/0 2	Studio di Nuovi processi di trattamento superficiale mediante tecnologie al plasma e informatizzazione degli stessi	FSE € 12.000
OLIVO ALBERTO (2017)	CHI M/0 4	Messa a punto di un processo fotocatalitico per la riduzione di CO ₂	PUBLIC INSTM € 2.800
LEONETTI BENEDETTA (2018)	CHI M/0 2	Sviluppo di nuovi protocolli per veicolare molecole con proprietà antimicrobiche nel trattamento di biofilm con l'obiettivo di superare i meccanismi di difesa da questi manifestati ai trattamenti tradizionali	PRIVATE BRENTA SRL € 4.841
GHEO GIULIA (2018)	CHI M/0 3	Studio della stabilità chimico-fisica di materiali innovativi per applicazioni nel settore della conservazione dei Beni Culturali ed elaborazione dati	MARGINI DSMN € 4.756
CAILOTTO SIMONE (2018)	CHI M/0 6	Produzione e caratterizzazione di materiali fluorescenti partendo da biomasse agroindustriali denominate carbon quantum dots (CQDs)	PRIVATE FAVINI €4.500

BACCHIN ARANNO (2019)	BIO/ 10	Produzione, purificazione e caratterizzazione di molteplici proteine bersaglio implicate nello sviluppo dell'osteoartrite	PRIVATE FIDIA € 15.000
ALBERONI CHIARA (2019)	CHI M/O 3	Sintesi e caratterizzazione di nanomateriali a base di ceria –titania per la fotodegradazione di coloranti	MARGINI DSMN € 1.000
BEDENDI GIADA (2019)	CHI M/O 1	Sperimentazione del sensore elettrochimico per l'acido perfluorooottansolfonico (PFOS) in campioni prelevati su impianti di trattamento acque	PRVATE- ACQUE VERONESI € 16.000
AMADIO EMANUELE (2019)	CHI M/O 6	Processi estrattivi a CO2 supercritica per il recupero di scarti di lavorazione del comparto confetturiero	FSE € 8.000
SCATTOLIN THOMAS (2019)	CHI M/O 3	Sintesi di complessi organometallici di palladio da impiegare come agenti antiproliferanti su cellule tumoriali	MARGINI DSMN € 8.000

Section C – Other departmental actions for research support

Linee guida per la compilazione

In questa sezione vanno segnalati eventuali ulteriori investimenti del Dipartimento a supporto della ricerca, ad esempio:

- (co-)finanziamenti per iscrizione a convegni, organizzazione di convegni, *proof-reading*, pubblicazioni su riviste ad alto impatto, *open access*, partecipazione a bandi europei ed internazionali;
- azioni di supporto alla ricerca che non prevedano la distribuzione di risorse a soggetti o a gruppi di ricerca specifici. Ad esempio: *Research Day*, Serie di *Working Papers*, Comunicazione della ricerca prodotta, seminari di Dipartimento, altri eventi.

The following table summarizes the actions implemented by the Department as a further research support.

Table. Actions undertaken by DSMN as a further research support in the reference period 2017-2019

Action	2017	2018	2019
	Number of actions/ allocated budget (€)	Number of actions/ allocated budget (€)	Number of actions/ allocated budget (€)
Co-funding of registrations to conferences and schools of PhD students enrolled in the courses of Chemistry and Bio-nanomaterials	6/(1798)	6/1380,00	7/2068,00
	Recipients (€): G. Moro (200); C. Pizzolitto (604); A. Bellè (230); E. Casagrande (164); M. Zalaffi (300); G. Berton (300)	Recipients (€): A. Morandini (180) E. Casagrande (200) M. Donnici (150) A. Del Tedesco (300) D. Zanardo (50) R. Calmanti (500)	Recipients (€): N. Pajer (50); G. Moro (220) M. Zucchelli (500) A. Fejza (400) M. Sakaj (180) M. Adeel (318) S. Hirano (400)
Contribution to the organization of International Conferences and Schools	1/888	1/500	1/4842
	International conference YISAC	Postgraduate Summer School on Green Chemistry	School on Nanomedicine
	1/396	5/2203	2/1775

Contribution to the organization of other events	Workshop Ancient hand-colored photographs: investigations between science and art	Workshop Italian Soft Days (833); Workshop "CIDETEQ" (295); Workshop Bilateral Yokohama (275): Associazione Mestre Mia, Seminars (300) Evolving BAS (500)	Associazione Mestre Mia "Caffè delle Scienze" (300); Workshop Nano-Biomaterials (1475)
Co-funding of PhD meetings, Interuniversity PhD course of Chemistry jointly held by Ca' Foscari and University of Trieste	2/3266	3/7142	3/9873
	Final year workshops	Final year workshops (3557); Winter school (3585)	Final year workshops (4593); Winter school (5280)
Invited seminars of external qualified experts	33/3736	29/2983	33/1618

Section D – Other incentives

Linee guida per la compilazione

Indicare menzioni, premi alla ricerca, altre forme di incentivazione e premialità per attività di ricerca non incluse nelle sezioni precedenti.

An additional incentive to support excellence in research is the "Research Award" (premio alla ricerca) which is granted every year by the Research Committee to a member of the department who stood out for publishing a high-quality paper as a corresponding Author. The Committee provides a two-step mechanism for the allocation of the grant: i) an internal call by which each member of DSMN is invited to submit his/her most valuable publications in the current year; ii) a comparative assessment (carried

out by the Committee) of submitted publications which considers the quality of the papers (IF, citations, etc) and the original contribution of the Author(s). This evaluation privileges papers reporting original research works performed within international collaborations/projects, where importantly, the contribution of member(s) of DSMN is clearly revealed. Albeit of modest economic entity (2000 €), the grant is representative of the effort that the Department is making to support research consistent with its yearly operating budget (YOB). It should be noted here that YOB (Fondo Unico di Dotazione: FUDD) of DSMN, due to University budget cuts, markedly decreased from 311 k€ of 2017 to 280 k€ of 2018 and 278 k€ of 2019 (was 345 k€ in 2016), out of which roughly half of the budget had already constrained allocations (mandatory expenses), and the residual part must support running teaching activities and ADIR. In this context, funding left available for strategic decisions is very limited, if any. Nonetheless, with the aim to promote its qualified researchers, the Department has agreed on a policy to ease career progressions of those members who are particularly productive in research, in terms of either published papers and projects. The career advancement plan is periodically discussed (at least every 6 months) by the Department Council, on proposal of the Director, based on the availability of funds assigned to DSMN (punti organico) by the central administration of the University.

Other research incentives as a mechanism for workload balancing (+ research / - teaching) cannot be implemented at present because teaching commitments of every member of DSMN are already to the maximum allowed loading, if not over, to cover the needs of courses delivered by the Department.

Section E – Internationalization actions

Linee guida per la compilazione

Indicare eventuali regolamenti dipartimentali di assegnazione delle risorse per finanziamento/concessione di mobilità internazionale *incoming* and *outgoing* (ad esempio mettendo un link al regolamento considerato), quali sono stati i risultati delle assegnazioni e i criteri di valutazione degli stessi.

The Department has been active in encouraging and planning international mobility at all junior and senior levels by taking advantage of different funding opportunities made available by both Ca' Foscari University (Erasmus+ ICM calls for extra-EU incoming and outgoing exchange of staff and overseas calls for outgoing mobility) and research projects of the department members (funds mostly for incoming mobility of international experts).

These activities have been carried out based on specific international agreements between universities or scientific institutions and Ca' Foscari by which both incoming and outgoing Visiting Professors and Visiting Scholars have been required to perform the following:

- teaching and/or seminar activities within one or more courses of the hosting University;
- research activity at the hosting University
- assessment activity within Panel Committees of PhD and Master Theses.

As detailed in the subsection E.1, a total of 11 foreign visiting scholars and 2 visiting professors with qualified scientific and professional CVs have been recruited by the Department. At the same time, ca 25% (10 persons) of the DSMN members have spent a period Abroad through different mobility options using either the Erasmus+ ICM programme or the overseas programme available at Ca' Foscari. Selection criteria of staff for incoming and outgoing mobility followed the requirements of National and University calls and guidelines pertinent to human mobility of research projects used to support exchanges.

Albeit teaching commitments of all DSMN members are to the maximum allowed loading (and even above, see section D), the Department was still able to grant one sabbatical leave (1 year) in the reference period, according to the rules and statute of Ca' Foscari University.

Subsection E.1 – Incoming and outgoing researchers

Istruzioni per la compilazione:

- *Visiting scholars Seminar activities*: il Regolamento di Ateneo prevede che i Visiting scholar, oltre all'attività di ricerca, possano tenere anche attività di tipo seminariale. In alternativa indicare "None";
 - *Visiting professors Teaching activities*: Indicare gli insegnamenti tenuti dal Visiting professor, inclusi quelli di dottorato;
 - *Funding Sources*: ad esempio: Department, Prin, H2020;
 - *Outgoing researchers Type of mobility / Type and duration of leave*: indicare ad es.: Sabbatical leave – 1yr, Dual appointment - permanent, Research leave – 3m (congedo per motivi di ricerca). Non riportare semplici missioni.
-

VISITING SCHOLARS

See Annex II for detailed list

VISITING PROFESSORS

See Annex II for detailed list

OUTGOING RESEARCHERS

See Annex II for detailed list

RESEARCHERS ON SABBATICAL OR RESEARCH LEAVE WITHOUT MOBILITY

See Annex II for detailed list

Subsection E.2 – Other actions or incentives for internationalization made available by the Department

In the reference period 2017-2019, further actions of DSMN to encourage internationalization have been addressed to either the widening and the consolidation of cooperation programs with foreign institutions, aimed to promote research interactions between partners through exchange of staff and students.

In particular, cooperation agreements have been signed by DSMN with:

1. Institute of Chemistry (IQ) – São Paulo State University (UNESP), Araraquara, Brazil 14/03/2017, DSMN referent prof. P. Ugo
2. University of Caxias do Sul, Brazil 13/04/2017, DSMN referent prof. L.M. Moretto
3. CIDETEQ, México 29/06/2017, DSMN referent Dr. A.M. Stortini
4. Kyoto Institute of Technology, Japan 17/01/2017, DSMN referent prof. A. Benedetti

The following Table summarizes the status of other international agreements promoted by DSMN and actually in force between Ca' Foscari University and other overseas institutions:

Table. International agreements promoted by DSMN active over the 2017-2019 period

Institution	Country	Validity period	Expected actions (mobility)	# of recipients (in/out)	DSMN referent
University of Sydney	Australia	2013-2023	(2 student/semester or 1/academic year)	6 in and 8 out	Prof. A. Perosa
Koreatech	Korea	2016-2021	2 student/semester (Bachelor)	2 in and 4 out	Prof. A. Giacometti

Kyoto Institute of Technolo gy	Japan	2018- 2023	6 students/se mester or 3/academic year	2 in and 2 out	Prof. A. Benedett i
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The cooperative program between DSMN and the University of Sydney (USyd) has proved very active over the years and allowed 7 PhD students (4 Italians and 3 Australians) to be awarded a joint PhD title by USyd and Ca' Foscari, within an international Cotutelle scheme.

Other actions implemented by DSMN for promoting internationalization have included agreements established within Erasmus mobility programs for outgoing and ingoing students within Europe (Table, <https://www.unive.it/data/11679/>).

Table. International agreements promoted by DSMN within Erasmus mobility programs within Europe and active in 2017-2019

Erasmus code (ISCED)	Host University	Valid ity	# of recipients (master and bachelor students from DSMN)			DSMN coordi nator
			2 0 1 7	2 0 1 8	2 0 1 9	
E VIGO01 (Chemis try)	Universida d De Vigo (Spain)	2014 /202 1	1	2		E. Morett i
E BARCEL O02	Universita t Autonoma de	2014 /202 1	2	1	2	P. Canton

(Chemistry)	Barcelona (Spain)					
SI NOVA-GO01 (Chemistry)	University of Nova Gorica (Slovenia)	2015 /2021		1		A. Giacometti
B NAMUR 01 (Chemistry)	FUNDP - UNIVERSITY OF NAMUR (France)	2014 /2021	1		1	P. Canton
F BORDEAUX58 (Chemistry)	Université de Bordeaux (France)	2014 /2021			1	L. Moretto
LT VILNIUS 01 (Chemistry)	Vilnius University (Lithuania)	2015 /2021			1	A. Benedetti
E CORDOBA01 (Chemistry)	Universidad De Cordoba (Spain)	2019 /2021			1	M. Selva

These Erasmus agreements - intended for the mobility of bachelor's and master's students within Europe - presently involve Chemistry as the exclusive discipline. However, thanks to the birth of a brand new course in engineering physics supported at DSMN even through by the recruitment of dedicated staff in physics and engineering fields, it is expected that the number and type of Erasmus agreements will expand and offer opportunities for international exchanges of students across a variety of scientific and technological disciplines.

The Table below reports other Erasmus agreements promoted by DSMN which, however, were not active in producing students' mobility in Europe the reference period (2017-2019).

Table. Other Erasmus agreements promoted by DSMN

Erasmus code (ISCED)	Host University	Validity	DSMN coordinator	
TR ANKARA01 (Chemistry)	Ankara University (Turkey)	2014/2 021	A. Benedetti	
TR ISTANBU07 (Chemistry)	Yildiz Teknik University (Turkey)	2014/2 021	A. Benedetti	
D BERLIN01 (Chemistry)	Freie UNIVERSITY Berlin (Germany)	2014/2 021	P. Canton	
E TARRAGON01 (Chemistry)	Universitat Rovira I Virgili (Spain)	2014/2 021	G. Fiorani	
F AVIGNON01 (Chemistry)	Université de Avignon (France)	2015/2 021	A.Pieropol li	
G THESSAL01 (Chemistry)	Aristotle Univ. of Thessaloniki (Greece)	2014- 2021	G. Fiorani	
SF KOKKOLA05 (Chemistry)	Centria University of Applied Sciences	2019/2 021	P. Canton	
UK BELFAST01 (Chemistry)	Queen's University of Belfast (UK)	2014- 2021	P. Canton	
PAVEIRO01 (Biology)	Universidade de Aveiro (P)	2014- 2021	E. Trave	
UK SOUTHAM01 (Chemistry)	University of Southampton (UK)	2014- 2021	F. Polo	

Finally, the last Table of this section lists Erasmus agreements promoted by DSMN for extra-Europe mobility.

Table. International agreements promoted by DSMN within Erasmus mobility programs extra-Europe and active in 2017-2019

Institution	Country	Validity period	Expected actions (mobility)	# of recipients (in/out)	DSMN referent
University of Sydney	Australia	2015-2017	2 PhD out, 1 PhD in, 1 Prof out, 1 Prof in, 1 ATS out, 1 ATS in	1 PhD out, 1 Prof out, 1 ATS out, 2 PhD in, 2 Prof in, 2 ATS in	Prof. A. Perosa
Monash University	Australia	2015-2017	1 Ma stu out, 1 PhD out, 1 Ma stu in, 1 PhD in, 1 Prof out, 1 Prof in	1 Ma stud out	Prof. A. Perosa
Kyoto Institute of Technology	Japan	2015-2017	2 Ma out, 2 Ma stu, 1 Prof out, 1 Prof in, 1 ATS out	2 Ma stu out, 1 ATS out,	Prof. A. Benedetti
		2018-2021	1 Ma stu out, 1 Prof in	1 Prof in	

Institut National de la Recherche Scientifique	Canada	2016-2018	2 Ma stu out, 1 PhD out, 2 Prof out, 1 Prof in, 1 PhD in	2 Ma Stu out, 1 PhD out, 2 Prof out, 1 Prof in, 1 PhD in	Prof. P. Canton
Bar-Ilan University	Israele	2018-2021	2 PhD out, 2 Prof out 2 PhD in, 2 Prof in	2 Prof out, 1 PhD in	Prof. A. Giacometti
National University of Mongolia	Mongolia	2018-2021	1 Prof out, 2 PhD in	1 Prof out	Prof. A. Benedetti
Centro de Investigación y Desarrollo Tecnológico en Electroquímica	Mexico	2019-2022			Dr. M. A. Stortini
University of Donja Gorica	Montenegro	2019-2022			Prof. M. Selva

ATS: Administrative-Technical Staff; Ma Stu: Master student

PART IV: Third Mission activities

Section A – Statement of the Departmental policy and objectives about Third Mission activities

Section A.1 – Statement of the Department overall strategy for the third mission and technology transfer

In harmony with the general strategies of Ca' Foscari University of Venice, the DSMN favours and promotes applied research, scientific and cultural cooperation between the University, its Departments, national, EU or international institutions, and the entrepreneurial world. In this context, the DSMN carries out an important activity of promotion of the Third Mission (TM) in terms of technology transfer and dissemination of scientific culture in harmony with the socio-economic and cultural context in which the Department is inserted. In particular, the Third Mission constitutes an important part of the DSMN strategy and is centred on a specific vision and reference values for the pursuit of specific objectives within the directives set by the EU Horizon program and foreseen Green Deal, Horizon Europe indications. In line with the main priorities reported in the latest strategic plan presented by DSMN in 2019-2020, TM activities will be subdivided in two different areas regarding the valorisation of research activities (macro-area A SUA-RD) and organization of public events to promote social, educational and cultural actions (macro-area B SUA-RD). In particular, DSMN has engaged different actions, as reported below:

Macro-area A:

- 4.1 – Promotion of intellectual property, innovation and know-how
- 4.2 – Spin-off
- 4.3 – Third Parties activities & contracts
- 4.4 – Carrier service

Macro-area B

- 4.5 – Cultural heritage
- 4.6 – Continuous education
- 4.7 – Public engagement

VISION:

The Department integrates the key activities of university life into a harmonious and synergistic framework: research - training - third mission. Through the interaction and collaboration between researchers and Accademics with multidisciplinary competences and highly qualified skills, innovative and integrated approaches are defined and pursued to address issues of strategic interest ranging from the development of new knowledge in the chemical sector, circular economy, nanotechnologies, biological and physical systems to face the great challenges related to the protection of the environment and citizens.

VALUES and MEANS:

The Department is designed and managed to be an integral part of the University, contributing to the life of the University's scientific and cultural community according to its specificities and peculiarities, and from which it draws its motivations and guidelines, developing synergies that are not limited to

formal and organizational structures, but give human and cultural depth to the activities that take place every day in the community by active training, scientific research and the third mission.

The spectrum of socio-economic repercussions of departmental research and communication agenda are very broad, as evidenced by the qualified technology transfer activity, which sees direct collaboration with companies, public bodies, high education schools and cultural associations of the territory.

The service has been guaranteed by the supervision of a TM Department's Delegate (Dr.ssa V. Beghetto), supported by Prof. S. Paganelli and Dr. F. Menegazzo for the high school program, Prof. E. Moretti as Delegate for communication and promotion, Prof. M. Bortoluzzi for sustainability actions and part time by administrative staff of the DSMN as support for the events (Dr.ssa F. Guidi), contract/projects administration (Dr. S. Zane), didactic secretariat (Dr. L. Oddi), web site (Dr. S. Fabris), contracts draft (Dr. C. Duse), sustainability actions and web site (T. Bettin), the Pink team (central administration of the University, 7 units) and Research Institute for Green and Blue Growth (central administration of the University, 2 units).

The activities include in particular: (i) support for activities related to public engagement and higher education; (ii) support in technology transfer and stakeholder commitment; (iii) management of research actives on behalf of third parties or National/EU financed projects, (iv) establishment of spin-offs, patenting and the preparation of research contracts (in collaboration with administrative staff of the Department and Pink team). The TM Delegate works in conjunction with the Research Area of the University.

Section A.2 – TM objectives for 2020-2021

The Department intends to make the most of all areas of the TM, with a focus on public engagement, technology transfer and partial self-financing through third party activities. Particular attention will be paid to the issue of environmental sustainability, declined in the various areas, in which the skills of all scientific areas will engage in a synergistic way.

Through the actions linked to these objectives, the TM intends to contribute to an increase in the external visibility of the University in its cultural, social and scientific specificities, obtained thanks to an intensification and diversification of communication actions and synergistic interaction.

Actions scheduled by DSMN for 2021.

Main priorities for 2020-2021 reported below are based on ANVUR SUA-RD indicators and data reported in the latest strategic plan presented by DSMN in 2020-2021, and specifically:

- I.1 – Intellectual property, innovation, know-how (TM1)
- I.2 – spin-off (TM2)
- I.3 – third party activities/contracts (TM3)
- I.4 – public engagement (TM4)
- I.5 – cultural heritage
- I.6 – continuous education

Target I.1 (TM1): Increase patent registration

$$P1 = \frac{[(\text{Number of patents registered 2018-2020}) - (\text{Number of patents registered 2017-2019})]}{(\text{Number of patents registered 2017-2019})}$$

$P1 \geq 5\%$

Target I.2 (TM2)

Increase the number of spin off

$$P2 = [(\text{Number of spin-off 2018-2020}) - (\text{Number of spin-off 2017-2019})] / (\text{Number of spin-off 2017-2019})$$

$$P2 \geq 5\%$$

Target I.3 (TM3): Increase the fund-raising activities with respect to previous years on a 3 years basis. Applied research will increase collaborative relationships with private entities, companies and stakeholders of the territory, with the dual purpose of increasing self-financing and creating job placement opportunities for both master's degree graduates and PhDs.

Environmental sustainability actions will be pursued supporting companies with solutions aiming to improve their ecological footprint at all levels (process, product, recycling, etc.) by exploiting the synergistic skills of all the scientific areas of the Department.

This action will generate an increase in collaborations with companies on two main levels: i) in the presentation of European and national projects that require their presence, ii) in order to broaden the field of action of the Department and increase the probability of success in the evaluation phase as many H2020 and Horizon Europe projects require the joint participation of companies and Universities.

Indicator for Target 3:

$$P3 = [(\text{Number of presented projects 2018-2020}) - (\text{Number of presented project 2017-2019})] / (\text{Number of presented projects 2017-2019})$$

$$P3 \geq 5\%$$

Target I.4 (TM4): Increase the dissemination activities (public events, conferences, meetings) with respect to previous years on a 3 years basis.

Maintaining and strengthening, in terms of visibility and participation, the main initiatives described in section 4.7 relating to public engagement, and the scheduling, advertising and implementation of dissemination initiatives on departmental research topics.

Consolidation and differentiation of public engagement initiatives aimed at promoting and disseminating scientific knowledge, education for sustainability and the promotion of active citizenship.

Following the state of emergency generated by the pandemic for Covid 19, the Department intends to promote dissemination and public engagement activities by organizing at least two online events involving local citizens and companies. In this connection, if the conditions are met, the Department intends to self-finance an Event in which the various research realities and activities carried out by the DSMN Researchers are presented to citizens and companies in the area. It is expected that this activity will then be repeated on an annual basis.

Creation of a database updated on a monthly basis that contains all the information regarding the various achievements of the DSMN Staff that are inherent with the third mission. Annual updating of the Department's information material

This will be done in order to constantly monitor the quality of the activities of the third mission and plan future activities, implement corrective actions if the need arises (for example for non-compliance with objectives)

Indicator for Target 4:

$$P4 = [(\text{Number of events 2018-2020}) - (\text{Number of events 2017-2019})] / (\text{Number of events 2017-2019})$$

P4 = average 2017-2019

		Data origin	2017-2019 yearly average	2020-2021 yearly average
			Baseline	Target
I.1	Intellectual property		4	+1
I.2	spin-off		0.67	+1
I.3	third party activities/contracts		257.000 €	289.000 €
I.4	public engagement		22	22

Subsection A.1 – Third Mission activities – Case studies

Title	“Progetto LEI- Professione Scienziate”
Year	2019-2020
Scientific responsible	Federica Menegazzo
Description <i>Illustrare l’attività con particolare riferimento al contesto di riferimento in cui si è collocata, ai soggetti coinvolti e al loro ruolo, alle risorse impiegate</i>	For the first time, an Italian University is setting up a series of activities and initiatives to promote the strengthening of the social and economic role of women in the world of work. In collaboration with DSMN the activities made it possible to involve over 135 students in a single event from high schools and high schools in the Venetian area.
Impact <i>Illustrare l’impatto delle attività svolte con riferimento all’ambito territoriale, al periodo di riferimento, al valore aggiunto per i beneficiari, alla dimensione economica, sociale e culturale</i>	Promotion and development of leadership skills Support for women's employability Dissemination of female business culture Support and development of self-employment and self-employment Increased access to women in STEM disciplines (Science, Technology, Engineering and Mathematics) - Hundreds of students, woman contacted
Indicators to corroborate impact <i>Inserire gli indicatori, ritenuti pertinenti dalla struttura proponente, che consentano di apprezzare l’impatto delle attività svolte</i>	Participants 2021 ≥ 2020

Title	CSA- Centro Grandi Strumentazioni
Year	2018-2019
Scientific responsible	Prof. Piero Reillo

<p>Description</p> <p><i>Illustrare l'attività con particolare riferimento al contesto di riferimento in cui si è collocata, ai soggetti coinvolti e al loro ruolo, alle risorse impiegate</i></p>	<p>The Department in collaboration with DAIS has opened an interdisciplinary laboratory, called CSA (Centro Grandi Strumentazioni), which has objectives to improve the quality of research, teaching and increase the activities in support of companies by providing a broad number of analysis and skills with an easy management system for the use of services.</p>
<p>Impact</p> <p><i>Illustrare l'impatto delle attività svolte con riferimento all'ambito territoriale, al periodo di riferimento, al valore aggiunto per i beneficiari, alla dimensione economica, sociale e culturale</i></p>	<p>Over 1Mil/€ of investment</p>
<p>Indicators to corroborate impact</p> <p><i>Inserire gli indicatori, ritenuti pertinenti dalla struttura proponente, che consentano di apprezzare l'impatto delle attività svolte</i></p>	<p>Number of contracts with external parties in 2020-2022: 10</p> <p>Earnings 2021: 50.000 euro</p>

Title	ELEMENTS
Year	2019
Scientific responsible	Dr V. Beghetto
<p>Description</p> <p><i>Illustrare l'attività con particolare riferimento al contesto di riferimento in cui si è collocata, ai soggetti coinvolti e al loro ruolo, alle risorse impiegate</i></p>	<p>ELEMENTS organized to celebrate 150th year of the periodic table in collaboration with Science Gallery Venice.</p> <p>An alternative perspective, the event has involved stakeholders such as companies, primary and high school, cultural and scientific events with over hundreds of people over a period of one month..</p>
<p>Impact</p> <p><i>Illustrare l'impatto delle attività svolte con riferimento all'ambito territoriale, al periodo di riferimento, al valore aggiunto per i beneficiari, alla dimensione economica, sociale e culturale</i></p>	<p>Dissemination of the activities developed by the DSMN, DAIS and other Departments of the University to a wide and important number of Stakeholders of the territory</p>
<p>Indicators to corroborate impact</p> <p><i>Inserire gli indicatori, ritenuti pertinenti dalla struttura proponente, che consentano di apprezzare l'impatto delle attività svolte</i></p>	<p>Number of participants</p>

Title	CHEERS
Year	2018-2019
Scientific responsible	Elisa Moretti
<p>Description</p> <p><i>Illustrare l'attività con particolare riferimento al contesto di riferimento in cui si è collocata, ai</i></p>	<p>Scientific manager of a research project commissioned with Serena srl winery on the development of photovoltaic cells for energy production (DSSC) through the</p>

<p><i>soggetti coinvolti e al loro ruolo, alle risorse impiegate</i></p>	<p>enhancement of winemaking by-products (24 months, funding of € 390.4k). In 2019 the work were used to apply for an Italian patent: Process for the construction of photoelectrochemical cells with the use of dyes extracted from winemaking residues No: 102019000006939, then purchased by the Serena srl winery (€ 29.3k).</p>
<p>Impact <i>Illustrare l'impatto delle attività svolte con riferimento all'ambito territoriale, al periodo di riferimento, al valore aggiunto per i beneficiari, alla dimensione economica, sociale e culturale</i></p>	<p>Technology transfer and dissemination Know how impact (patent application) Economic impact: over 400K€ in two years.</p>
<p>Indicators to corroborate impact <i>Inserire gli indicatori, ritenuti pertinenti dalla struttura proponente, che consentano di apprezzare l'impatto delle attività svolte</i></p>	

Section B – Third Mission data

The Department aims to be the stand point for the Cà Foscari University of Venice and the surrounding territory for the disciplines that refer to Green Chemistry, Industrial Chemistry, Nano and Biotechnology, Natural and Physical Sciences, promoting development actions and enhancement of the wealth of knowledge acquired through research, which have a positive impact on culture, technology transfer, enhancement of regional entrepreneurship and the economy at local, national and European level. By establishing, participating and supporting various Interdepartmental Research Centres, including those aimed at industrial research (IIT, C4S, see below) and recognized by appropriate regional and national accreditations, the Department, through many of its members (Academics and Technical-Administrative Staff), contributes in significant and incisive ways to technology transfer and the creation of new products characterized by important application relevant for intellectual property. In addition to fulfilling the institutional task of higher education, basic and applied scientific research to the best of its potential, DSMN seeks to open up to society, setting up social networks with associations, cultural centres, local authorities, citizens, businesses enterprises. The Department also incorporates an interdisciplinary laboratory, called CSA (Centro Grandi Strumentazioni), which has among its main objectives to improve the quality of research, teaching and increase the activities in support of companies by providing a broad package of analysis and skills with an easy management system for the use of services. In the last two years, the Department has set up an internal commission for the management of CSA instruments which by 2021 will allow companies to access to a wide range of services.

Sub-section 4.1 Promotion of intellectual property, innovation and know-how

In 2019 the Department filed 5 patents with an increase of 100% compared to 2018 and equivalent to 2017. These activities concern areas ranging from the development of new anticancer pharmaceutical products for the cosmetic sector, molecular diagnostics for the development of new production photovoltaic cells from wine waste.

As a general remark it appears that the increasing number of patents registered in the last years has been favoured by the acquisition campaign of new personnel, performed by DSMN and by the efficient interaction of spin-off with the territory. Protection and safeguarding of intellectual property and patenting strategies allowed the members of the Department to be currently responsible for about 70% of the patent applications owned by Ca' Foscari University of Venice.

TOTAL NUMBER OF PATENTS (per year)

2017	2018	2019
5	2	5

LIST OF PATENTS REGISTERED IN THE THREE YEARS PERIOD 2017-2019

PATENT ID	PUBLICATION YEAR	TITLE	INVENTOR(S)	APPLICANT(S)
WO201751363	2017	Process for the preparation of organic carbonate derivates	Tabanelli Tommaso; Cavani Fabrizio; Selva Maurizio	Univ. degli Studi di Bologna ; Univ. Ca' Foscari Venezia
WO2017214245	2017	Cleaning compositions including nuclease enzyme and tannins	Lant Neil Joseph; Bianchetti Giulia Ottavia; Crestini Claudia	Procter & Gamble
EP3448823	2017	Method for tinting glass lenses and related glass lenses	Cattaruzza Elti; Mardegan Marco; Grasso Omar	Luxottica
EP3365419	2017	Bio-cleansing kit and method for removing biofilms from substrates	Riello Pietro; Benedetti Alvise; Storaro Loretta; Scarpa Irene	Brenta
EP3475308	2017	Use of 2,4-dihalo-6-substituted-1,3,5-triazines and derivative thereof as condensation, cross-linking,	Beghetto Valentina; Agostinis Lodovico	Crossin g

		tanning, grafting and curing agents		
EP3574 039	2018	Functionalized lignin as a dispersing agent for rubber compounds	Di Ronza Raffaele; Auriscchio Claudia; Caliano Ludovica ; Crestini Claudia	Bridgest one
EP3275 984	2018	Use of compositions comprising tannins	Bianchetti Giulia Ottavia; Crestini Claudia	Procter & Gamble
EP3421 568	2019	Use of oligoglucosamine as shale inhibitor	Kierat Radoslaw; Putzien Sophie; Bruchmann Bernd; Fleischel Olivier; Gigli Matteo; Mülhaupt Rolf; Künkel Andreas; Lafuente Cerdá Óscar	Basf
EP3517 595	2019	Fabric treatment compositions	Bianchetti Giulia Ottavia; Crestini Claudia; Perfetti Marco; Richard Theo;	Procter & Gamble

			Kormann Karine	
WO201 921559 2	2019	Medical or cosmetic compounds, and composition thus obtained	Signorett o Michela; Menegaz zo Federica; Ghedini Elena	Univ. Ca' Foscari Venezia
EP3684 811	2019	Multiple specificity binders of cxc chemokines and uses thereof	Angelini Alessand ro; Wittrup Karl Dane; Luster Andrew David M D	Mit - Massac husetts Institut e Of Technol ogy; Massac husetts General Hospital
IT1020 19000 00693 9	2019	Procedimento per la realizzazione di celle fotoelettrochimich e con l'utilizzo di coloranti estratti da residui di vinificazione	E. Moretti, M. Menegh etti, A. Talon, E. Rodrigu ez- Castello n, S. Menegh etti	Univ. Ca' Foscari Venezia

TOTAL NUMBER OF PLANT VARIETY RIGHTS (per year)

2017	2018	2019
-	-	-

LIST OF PLANT VARIETY RIGHTS REGISTERED IN THE THREE YEARS PERIOD 2017-2019

ID	PUBLICAT ION YEAR	TITLE	INVENTOR(S)	APPLICANT (S)

Sub-section 4.2. Spin-Off

The promotion of intellectual property, innovation, know-how and spin-off foundation is one of the strategic aspects related to the third mission. Collaboration between Universities and companies is essential for progress and growth in an era of ever new global challenges. For this reason, the DSMN, thanks to its multidisciplinary scientific knowledge, promotes applied research and scientific cooperation between our researchers and national and international stakeholders, making available DSMN personnel, know-how, and facilities, to support innovative projects, enhancing research results by transforming them into economic and social initiatives. This feature is directly correlated to the growing number of National and European funding that the Department has applied for and has been financed in recent years.

DSMN members are also founders of Spin Off & Innovative Start-ups with no ownership by the University but which are in some cases participated by Fondazione Ca' Foscari. The active spin-off companies operate in the field of industrial chemistry, green chemistry, biopolymers, circular economy, medical biotechnology, sensors and nanotechnology and in food traceability and environmental protection. Over one third of the Spin Offs of the University of Venice belong to the DSMN.

Entities and companies can make use of the structures and skills of the Department and a team dedicated by the University to support and mediate relationships between researchers and companies (Pink, https://www.unive.it/pag/30173/?no_cache=1). This highly qualified Pink team can analyse the various business needs, identify the most appropriate collaborative methods and negotiate specific contracts that govern the relationships. In addition, Pink and DSMN collaborate actively for the development of new spin-offs, the protection of intellectual property and the filing of patents.

Currently the DSMN has 5 spin-offs (out of 14 UNIVE spin-off):

- Aries Srl dedicated to innovation through material science and biotechnology.
- Biofuture Medicine Srl which develops diagnostic kits for the study and treatment of cancer and other diseases affecting human well-being.
- Crossing Srl dedicated to innovation of products and processes, using green organic compounds, which improve the socio-economic and environmental sustainability of the manufacturing industry.
- Nasiertech Srl develops remedies for environmental effects on stone, pictorial, textile, wooden and paper artefacts.
- VeNice Srl, a company that deals with the research and development of chemical specialties and formulation processes aimed at the cosmetic sector.

In 2019 the documents required, and authorisation of a new spin-off have been presented and positively evaluated so the institution of at least a new spin off is expected by 2020.

TOTAL NUMBER OF REGISTERED SPIN-OFF (per year)

2017	2018	2019
1	1	0

LIST OF SPIN-OFF REGISTERED IN THE THREE YEARS REFERENCE PERIOD

NAME	YEAR	FOUNDER/MEMBER
Biofuture Medicine s.r.l.	2017	Flavio Rizzolio
VeNice s.r.l.	2018	Michela Signoretto

Sub-section 4.3. Third parties activities & contracts

As part of the third mission, the DSMN has had and continues to have fruitful collaborations with local and national companies and with non-university research institutes. These collaborations have made it possible to acquire significant resources to finance and/or co-finance various research grants and doctoral grants and to acquire new instrumentation (a scanning electron microscope, cost 350 KE). Thanks to the collaborations undertaken with companies, research activities have been developed that are part of the actions envisaged by the European Life projects (Program for the Environment and Climate Actions).

Thanks to the fiduciary relationship between the DSMN and two large industries in the region, with the contribution of the Research Office, the new loyalty method (RICAP agreements, <https://www.unive.it/pag/38168/>) has been designed, which makes it possible to easily manage problems related to intellectual property and to finance grants for research and doctoral activities. All together private contracts have gained over 490 kEuro in the three-year period from 2017-2019.

Remaining in the field of Fund raising activities, aware of the low ability demonstrated in previous years to attract funding from competitive tenders (European, International), a great effort has been devoted by the TM Delegate to promote National and EU projects within the DSMN and potential stakeholders. Stakeholder involvement has been achieved participating to many national and international Congress, convention, EU and Apre open days and by way of web sites such as Crowdhelix with the support of Research Institute for Green and Blue Growth (Dr. C. Maignan).

The Institute for Global Challenges (IGC) is one of six transdisciplinary centres where thematic groups develop advanced research to face current and future global challenges. The IGC centre supports through its six Research Institutes the design of innovative and collaborative research projects for international funding application and related initiatives that promote the cross-fertilization among researchers from different backgrounds. DSMN members are associated mostly to Green and Blue Growth involved in Environmental technology and green economy, enabling the uptake of climate information and services in real decision-making processes and finding resilient and efficient alternatives to our fossil-based economy are among the key challenges of our society. The IGC has been established in May 2020 following the successful experience of the Research for Global Challenges initiative, which since 2015 has been bringing together transversal research groups and a number of international research partner and networking opportunities for cross-fertilization and synergies that are strategic keys to global challenges (<https://www.unive.it/data/12149/>).

Thanks to the significant activity of the Delegate for the TM and various members of DSMN of DSMN in collaboration with Spin Off, the department is now a very active member of the new strategic plan of the Veneto Region regarding Regional Cluster development and fund-raising program. In particular, Regional Innovative Network, started out in 2017, is meant an aggregation between companies and public and private entities, present in the regional context, but not necessarily territorially contiguous, which operates in innovative areas of any manufacturing sector, able to develop a set of initiatives and projects relevant for the regional economy, not necessarily limited to a specific production area but open to multi-disciplinary sectors.

There are 20 Regional Innovative Networks recognized by the Veneto Regional Council, each of which is placed in one of the four specialization areas identified by the Veneto RIS3.

DSMN collaborates with Veneto Green Cluster, RibesNest and M3-NET and within POR-FESR 2014-2020 Veneto Region - Year 2017 Axis 1 Action 1.1.4 has received financed projects for over 350.000 € (<https://www.unive.it/pag/12642/?L=1>).

Moreover, by means of the collaboration between Spin Off of UNIVE, DSMN now collaborates with VeniSIA dealing with Venice sustainable development challenges through an acceleration process where companies identify their main sustainable development challenges; sustainability researchers

develop consistent solutions in collaboration with Ca' Foscari University best master's students along their internship to support the sustainability innovation projects. Additional independent smart workers will join VeniSIA to establish and manage a community of innovators, able to attract worldwide smart workers, interested in a unique living and working experience in Venice. The collaboration has generated a funding project application for 600.000 euro presently under evaluation for 2020-2022.

Thanks to the TM team and collaboration with the Pink Group and Green challenges Team an increasing trend has been registered for the presentation of EU funded projects.

Sub-section 4.4 Career Service

DSMN collaborates with the Career Service present by Ca' Foscari University central administrative area which is dedicated to preparing students and graduates to find a job and support training and professional work experience. Throughout the year career guidance events, internships, seminars, etc. are organised aimed at promoting graduate employability and drawing a roadmap to professional success. Additionally, it supports its well-consolidated network of (inter)national corporate partners in terms of employer branding in order to recruit the most talented profiles and thus satisfy the needs of the fast-changing labour market.

All its activities and projects are related the University four study areas: Economics, Languages, Humanities and Sciences.

Moreover, by means of the carrier office companies can take advantage of financed projects by the Veneto Region for the training (by DSMN) of graduate students favouring employment (progetto garanzia giovani. <https://www.regione.veneto.it/web/lavoro/garanzia-giovani>).

Overall DSMN reports a relevant number of graduate and under-graduate stage with companies of the territory. In particular, the number of stages from 2017 to 2019 has gradually increased from 16 (2017), 20 (2018) and 27 (2019). Research activity carried out regards chemistry, nanomaterials, biomedical and cultural heritage and a gradual enlargement of the territory involved has been registered involving Veneto, Lombardia and Emilia Romagna.

Sub-section 4.5. Long learning and training actions

The DSMN department several years has been very active in its long learning and training actions dedicated to high school students but also to primary and secondary school students. The long learning actions of the department, in collaboration with the Orientation Office of Ca' Foscari, are coordinated by Prof. Stefano Paganelli and Dr. Federica Menegazzo, assisted by Dr. Laura Oddi from the teaching secretariat. A program of courses for updating professional skills aimed at companies, organizations and public administrations.

For many years DSMN has organized training courses for high school teachers, an action that DSMN considers very important and which is strongly supported by the Ministry of Education. These courses, lasting sixteen hours, provide interactive lessons, held by University professors, regarding the most modern aspects of chemistry and biochemistry, thus transmitting knowledge that a teacher could hardly be able to achieve. The courses carried out until now, have always had a more than positive response from teachers who every year regularly ask us to organize new courses in various scientific sectors.

In addition to scheduled training, DSMN is collaborating with Ca' Foscari Challenge School to give the opportunity to plan funded training courses. Presently there are many tailor-made training initiatives

for which complete customization is possible, thanks to the teaching design knowledge of the teachers and technical staff of Challenge School. DSMN within the topics of sustainable chemistry and environmental sciences is organizing new courses of interest for the manufacturing area of the Veneto region. Master courses will focus on strategic areas of interest within the framework of smart specialization strategy (RIS3) set by the EU and adopted by the Veneto Region for the POR-FESR financing program 2014-2020, i.e. Smart Agrifood; Sustainable living; Smart Manufacturing; Creative industries.

One of the strategic points and strength of our actions is the organization of one to four weeks stages, that students can carry out in the department's research laboratories, thus sharing the experiences that academic researchers face every day. This action is also part of the former "alternanza scuola lavoro", now called Pathways for Transversal Skills and Orientation (PCTO), seeing the participation, every year, of about thirty students from different schools in the Veneto region. The students collaborate with researchers and doctoral students for eight hours a day and at the end of the training experience the students are required to write a report which will be discussed with their laboratory tutors.

Regarding PCTO, in the last two years we have presented a project, in collaboration with the scientific area library (BAS), entitled "The chemist of tomorrow" with the objective of providing the basis to face a chemical laboratory respecting the safety rules, learn to work effectively in a research group and the analytical techniques required by the experiences in progress. In addition, the activity included a six-hour module, edited by BAS, relating to bibliographic research and its importance in the scientific field. The project includes a power point presentation that each student must make and expose in front of both the laboratory tutor and fellows, in order to reflect on the laboratory experiences and the importance of transferring their knowledge to others.

DSMN, on yearly bases, organizes in collaboration with UNIVE an Open day Event (<https://www.unive.it/pag/9847/>), in addition to the presentation of the degree courses, organizing mini scientific lessons to demonstrate the green and sustainable relevance of chemistry and simple benchtop demonstration experiments (<https://www.unive.it/pag/13463/>).

The orientation actions also include the organization of scientific conferences by the schools to introduce young students towards the study of increasingly sustainable chemistry, aimed at socio-economic and technological development respectful of man and environment.

All orientation and training activities are also strongly supported by Piano Lauree Scientifiche (PLS) (<https://www.unive.it/pag/16759/>), a ministerial project created with the aim of increasing enrolment in degree courses in Hard Sciences and then, subsequently, also extended to other scientific degree courses. Our Department belongs to PLS Chemistry and is coordinated by prof. Stefano Paganelli, assisted by Dr. Laura Oddi of the didactic secretariat. PCTO is devoted to implement the reputation of the chemistry in the territory of Marghera (VE).

As part of the PLS of DSMN, tests were proposed to high school classes, at the beginning and at the end of the school year, regarding different aspects of chemistry, so that students could self-assess their degree of preparation and, especially for students in the last year of studies, to be able to make an informed choice of the university course.

LIFELONG LEARNING ACTIVITIES

	2017	2018	2019
Nr. of provided courses	1	4	4
Hours of teaching	16	397	391

Nr. of participants	29	61	100
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“ALTERNANZA SCUOLA LAVORO” PROJECT WITH SECONDARY SCHOOLS

	2017	2018	2019
1. Nr of projects carried out	10	5	10
2. Nr. of students involved	211	178	451

MOOC AND BLENDED COURSES

	2017	2018	2019
Nr of MOOC provided	2	2	2
- of which in English	0	0	0
Nr. of participants	182	275	242

	2017	2018	2019
Nr of Blended courses provided	0	0	0
- of which in English	0	0	0
Nr. of participants	0	0	0

Sub-section 4.6 Cultural Heritage

Within the protection and scientific knowledge inherent with cultural heritage of which Venice is one of the most outstanding Italian players, at the end of 2018 in collaboration with DSMN, DAIS, and IIT (Italian Institute of Technology -Genoa) the Centre for cultural heritage was inaugurated.

(https://www.unive.it/pag/14024/?tx_news_pi1%5Bnews%5D=6120&cHash=9e7e5082ba5e61fa9e70b2e7b34e61a5).

The new IIT centre is dedicated to the development of new technologies and materials in the field of study and conservation of cultural heritage. IIT is part of a national network of Institutes consisting of 10 centres in Italy and two abroad (at MIT and Harvard University in the USA).

Venice, emblem of the heritage of humanity to be protected, thanks to this new centre of the IIT network and the expertise of Ca' Foscari, becomes a laboratory for the study, analysis, conservation, even preventive, and the protection of architectural and artistic wealth and archaeological preserved in Italy and in the world.

Various members of DSMN have worked in collaboration with DAIS and central administration to organize the scientific and cultural contribution of UNIVE to this new centre of excellence for cultural heritage.

Few of the scientific thematic which are presently developed by the Venetian IIT centre have been awarded with PhD scholarships and is an important bridge for intercultural exchange on Italian and International level.

Sub-section 4.7 Public Engagement & Events

The Department is also strongly committed in terms of public engagement, with a multiplicity of actions at different levels coordinated by the Delegate of the TM and the Delegate for communication and promotion (Prof. E. Moretti). The involvement of the Department in the main strategies of the University of Ca' Foscari Third Mission, highlights the peculiarities and strengths listed below.

The Department is active in the dissemination of scientific knowledge to the outside world, organizing multiple opportunities to interact with citizens and a wider audience. The departmental in the past have contributed and actively contributes to the organization of important public events.

Over 20 events have been organized yearly in 2017-2019, most relevant of which are listed below:

- **Progetto LEI** (<https://www.unive.it/pag/31274>): In addition to the organization of stages and conferences, in the last year, in collaboration with the Career Service of Ca' Foscari, LEI project event intended to involve students and, in particular, female students, to try to direct the girls towards science such as chemistry, overcoming old wrong messages and, fortunately, nowadays largely outdated, which considered chemistry and science in general to be the prerogative of males. Established women in the scientific work field were invited to give testimony of their training by interacting with the girls present at the event.

- **Best Practice and Circular Economy**

(https://www.unive.it/pag/29605/?tx_news_pi1%5Bnews%5D=7070&cHash=ce298ac55866a534808b8239c663956e): event held on May 31, 2019 by DSMN with over 100 participants among companies, policy makers, and students. Organised as closing event of LIFE BIOPOL financed project, was the occasion to report real success cases regarding environmentally sustainable technologies and circular economy, developed by University in collaboration with National and EU companies. As part of the virtuous projects of Circular Economy, numerous local companies belonging to the innovative Veneto Green Cluster network have also been involved.

- **Water in Venice event:** organized by the Science of Complexity and Green Challenges teams, as part of the Research for Global Challenges project in collaboration with DSMN, the initiative aims to make Ca' Foscari and Venice an international reference point for research on water, declined in its many aspects.

This first event focused on the chemical-physical and solvation properties of water and with the participation of six international speakers and coordinated by the scientific officer of the MAECI (Ministry of Foreign Affairs and International Cooperation).

- **Green Challenges for Sustainable Value Chains:** The event organized in collaboration with Cluster Spring was dedicated to the in-depth study of issues relating to the use of renewable resources and the development of sustainable processes. Particular attention will be paid to Use of renewable resources as raw materials; Creation of supply chains and bio-refineries, bio-based products; Implementation of support actions to research and development. Over 100 participants were present among companies, policy makers, and students.

In the occasion of the 150th anniversary of the periodic table DSMN in cooaboration with Science Gallery Venice has organised an interdisciplinary event entitled Elements (https://www.unive.it/pag/14024/?tx_news_pi1%5Bnews%5D=7904&cHash=22bd015c3a5951cd9344b5036d46e620) involving a wide number of stakeholders

PART V: Assessment

Section A – Self Evaluation of Research and Third Mission activities

Subsection A.1 - Indicators

Linee guida per la compilazione

Riportare eventuali indicatori (e i loro valori) che vengono utilizzati in fase di autovalutazione (differenti, relativamente alla auto-valutazione dell'attività di ricerca, da quelli già presentati nella Parte II). Ad esempio, gli indicatori considerati nei piani di sviluppo triennali dei dipartimenti e criteri specifici (anche qualitativi) di valutazione delle attività di ricerca e di Terza Missione.

Subsection A.2 – General analysis, taking into consideration the data reported in parts I, II III and IV

Linee guida per la compilazione

- La riflessione auto-valutativa del Dipartimento sulle attività di Ricerca e di Terza Missione **va posta in relazione a quanto riportato nelle Parti I, II, III e IV della presente relazione**, includendo in particolare un'analisi dell'andamento degli indicatori della Parte II negli ultimi (almeno) tre anni e del livello di raggiungimento degli obiettivi triennali del Dipartimento.
 - È opportuno **specificare le criticità ma anche i punti di forza** o semplicemente gli aspetti su cui non si ritiene di dovere intervenire in modo specifico perché, ad esempio, i risultati raggiunti sono già in linea con le linee di sviluppo del Dipartimento, **rendicontando attentamente lo stato di avanzamento delle azioni correttive previste nella relazione precedente**, giustificando l'eventuale mancata attuazione di alcune di esse.
 - L'analisi deve prevedere una sezione dedicata al giudizio del Nucleo di Valutazione di Ateneo relativo alla Relazione dipartimentale di monitoraggio 2019, in cui **fornire una risposta puntuale alle eventuali criticità sollevate e alle indicazioni ricevute ed evidenziare le azioni correttive attuate**.
 - **Va data evidenza alle azioni previste** dal Dipartimento ai fini dello sviluppo e della valorizzazione delle attività di Ricerca e di Terza Missione.
-

Reply to the NdV remarks

The Department acknowledges reception of the suggestions raised by the NdV in connection with our previous 2019 Report. Please find below all specific points raised by the NdV and our reply.

Recruitment of new faculties and staff career (R4.B.1)

NdV Keep promotion and new recruitment distinct; Define specific strategies

Our Reply. As described in the last 2019 Annual Report and further underlined in the present one, the Department has lately devoted a considerable attention to the recruitment of new faculties with specific and different backgrounds, mostly from abroad. The launch of the new BS program, 'Physical Engineering' that started in 2020, will however require to strengthen our staff in the Engineering domain, even more if we consider that in 2023 will start the corresponding Master program. We have also dedicated particular care in the **recruitment of new faculties in the area of Mathematics** that is very important for all scientific disciplines. In doing this, **we have started a joint collaboration with the DAIS Department** which also have the necessity of recruiting in the same area, with the aim of creating a small but active group of young mathematicians able to collaborate within each other as well as with other groups in different fields, combining more theoretical activities in the field of non-linear partial differential equation characteristic of the mathematicians working in the DSMN Department (MAT05) with more numerical applications in fluidodynamics and elasticity theory characteristics of the mathematicians working in the DAIS Department (MAT08).

Given the limited financial resource accessible to the Department (<100.00 euro/year) we are currently unable to plan opportunities of co-financing as well as start-up packages for newly recruited members in addition to those already offered by the University to all new recruited staff. Moreover, the recruitment of additional members is currently affected by the limited spaces and infrastructures available at the host site. However, thanks to an important financial support by Ca'

Foscari, the Department will be provided with a new interdisciplinary laboratory, CSA (Centro Grandi Strumentazioni) <https://www.unive.it/pag/33662>

The new “high standards” equipment will improve the quality of research, promote the collaborations with Companies and stimulate the interest of possible newly recruited members. The Department has also taken up a policy for the improvements of the staff career, of the single member of the department, based on the results on research, teaching, fund raising and institutional task.

This includes periodic monitoring of the Department performance with general and open presentations to the Department General Assembly, as well as the scouting of suitable profiles of both young and fully accomplished scientists currently working abroad and that might be interested in a return to Italy. The Brexit finalization might be expedient in this strategy. The Research Committee is working to define, if possible, a general scheme to translate these general ideas into well defined guidelines.

General policy (R4.B.1)

NdV More focus on specific areas and include analysis of the VQR and SUA-RD

Our Reply. The Department, in accordance with already established rules, will continue to adopt the criteria defined by the International scientific community for the evaluation of the research, taking into account the bibliometric sectors (only articles indexed in Web of Science (WoS)/Scopus databases).

In particular, the number of articles published per year, the Journals’ quality considering the impact factor parameter, IF (belonging to the first decile of each subject category), the number of total citations of the published articles and Hirsch index (h index) are periodically monitored and evaluated.

As reported above (Part II Section B) the Department is aiming to further increase the total number of publications, while at the same time striving to improve the quality of the scientific products and also carefully considering the type of Journals to publish in, selecting those with a higher impact factor.

An internal indicator used to monitor and incentive the number and quality of publications and which takes the above parameters into account is the internal funding that the Department allocates annually for research, ADIR (see Part II Section B).

A specific strategy to help and stimulate low-performing Departmental members has also been implemented with periodical meeting and moral suasion.

Additional identified indicators hinge on, performance of the new recruited Faculty staff and the number of publications related to the new interdisciplinary research lines.

The Department Research Committee periodically monitors all the indicators that have been outlined in Part II Section B for all the Department members, proposing improvement solutions to increase their quality as well as quantity.

All these actions are in line with the last available SUA-RD document (Ricerca 2014-2017 Sections A and B). It is important to note that this document was drafted in 2017 and hence reflects to a different situation of the Department in terms of teaching initiatives and new faculty members selected with particular attention to the level of research. Yet, it was indeed in this SUA-RD document (see Figure 1, Section A page 3), that the progressive reduction of the Departmental staff

was highlighted. Most of the actions carried out by the Department in the last 3 years were implemented to cope with this problem.

Concerning the Third Mission, we refer to the detailed analysis reported in Part IV Section A that underlines the specific attention of the Department on this issue and the results obtained in the past three years.

Action enforced to improve the general performance (R4.B.2)

NdV No actions are outlined to monitor and analyse the Department performance.

Our Reply We readily acknowledge that this particular part was not particularly emphasized in our previous 2019 Annual Report. We have attempted to do this in the present one and we refer to Part I Section A, as well as to the reference to this point mentioned in each specific Section, for all the details.

ANNEX I: List of Research Fellows 2016-2019

Research fellow	SS D	Research Topic	Funding sources
Roberto Sole (anni 2016- 2017 – 2018-2019 durata 36 mesi)	CHI M/04	Rivalorizzazione delle Biomasse per la sintesi di Biopolimeri da impiegare come concianti per la produzione di cuoio ad alta sostenibilità	EUROPEAN PROJECT LIFE BIOPOL € 72000
OTTINI RICCARDO (anni 2016-2017 durata 24 mesi)	CHI M/02	Studio delle interazioni fra acciaio liquido e refrattari paniera	PRIVATE (Acciaierie Venete) € 30.000+30.000
MENEGAZZO FEDERICA (anni 2016 2017 durata 24 mesi)	CHI M/04	Sviluppo di catalizzatori eterogenei per la bioraffineria del futuro	PUBLIC INSTMI € 23.462+ 23.602
GASPARETTO GIULIA (2017)	CHI M/04	Green Organic Agents for Sustainable Tanneries	EUROPEAN PROJECT LIFE GOAST € 23.765

SKRBIC TATJANA (2017)	FIS /03	Simulazione di Dinamica di processi di collisione tra fiale di vetro	PRIVATE NUOVA OMPI € 26.140
SPONCHIA GABRIELE (anni 2017- 2018- 2019 durata 36 mesi)	CHI M/ 02	Progettazione modelli di sintesi e simulazioni di scale-up di nanomateriali di natura organica ed inorganica per nuove formulazioni farmaceutiche di prodotti dotati di attività antibatterica ed antibiotica, antiinfiammatoria, antitumorale	PRIVATE BRENTA S.R.L. € 26.000 + 30.000 + 30000
GHEDINI ELENA (2017)	CHI M/ 04	Sviluppo di catalizzatori metallici nanostrutturati	PRIVATE CASALE S.A. € 24.000
PIETROBON LUCA (anni 2017 - 2018) durata 24 mesi)	CHI M/ 04	Sintesi di nuovi materiali polimerici da usare come consolidati e protettivi ecosostenibili per il restauro architettonico dei beni culturali	NATIONAL PROJECT SMART CITIES € 24.000+24.000
AMBROSI EMMANUELE KIZITO (anni 2016 - 2017 - 2018 durata 36 mesi)	CHI M/ 02	Biomolecole per il targeting attivo in dispositivi teranostici	DSMN € 30.000+30.000
ZUIN ALESSANDRA (2017)	CHI M/ 03	Studio delle proprietà del canapulo per un biomateriale ad alto comfort per l'edilizia	FSE € 24.000
BRAGA TOMMASO (2017)	FIS /03	Simulazione MD di fiale su tavola di accumulazione con collisioni anelastiche	FSE € 24.000
EMANUELE AMADIO (2017)	CHI M/ 06	Estrazioni con CO2 densa di prodotti naturali per applicazioni nel comparto cosmetico	FSE € 24.000

LEONARDO LANFREDI (2017)	CHI M/ 02	Preparazione di filtri solari ad elevata protezione	FSE € 24.000
TANDUO ENRICA (2017)	CHI M/ 04	VeNICE: formulati Naturali e Innovativi per una Cosmesi Efficace in Veneto	FSE € 24.000
TIEULI SEBASTIANO (2017)	CHI M/ 04	ELPIS - Enhancement of Lignocellulose Processing for Innovation and Sustainability	FSE € 24.000
CAMPAGNOL DAVIDE (2017)	BIO /11	Sviluppo di kit biomolecolari per il monitoraggio di PFAS e pesticidi in prodotti agro-alimentari	FSE € 24.000
CLAUDIO COSTANTINO (2017)	CHI M/ 01	Sviluppo di sensori elettrochimici per il monitoraggio di PFAS e pesticidi in prodotti agro-alimentari	FSE € 24.000
BASSANI MARCO (2018 - 2019)	CHI M/ 06	Fluorurazione regio- e stereo-selettiva di composti aromatici tensionati	PRIVATE GALENTIS € 26.000 + 26000
TIEULI SEBASTIANO (2018 - 2019)	CHI M/ 04	Caratterizzazione dei prodotti di rasatura delle pelli attraverso analisi chimico - strumentali	EUROPEAN PROJECT LIFE GOAST € 23.786 + 23.786
GHEDINI ELENA (2018)	CHI M/ 04	HEterogeneous Robust Catalysts to Upgrade Low valuE biomass Stream (Hercules)	NATIONALE PROJECT PRIN 2015 € 26.000

CONCA SILVIA (2018 - 2019)	CHI M/ 04	Studio di fattibilità per il recupero e riciclo di materiale di scarto di natura sintetica e popolazione di una innovativa banca dati digitale	POR - FESR PROJECT RIR - SARR €23.786 + 23786
BARDELLA NOEMI (2018 - 2019)	CHI M/ 04	Valutazione delle possibili modalità di recupero per scarti di edilizia, plastiche o asfalti e popolazione di una innovativa banca dati digitale	POR - FESR PROJECT RIR - SARR € 23.786 + 23786
LORENZO BRANZI (2018)	CHI M/ 02	Caratterizzazione di nanocomposti polimerici piezoelettrici per generazione di energia elettrica dal movimento	FSE € 24.000
MIOLO MATTIA (2018)	CHI M/ 02	Tessuti polimerici schermanti radiazioni elettromagnetiche a bassa frequenza: caratterizzazione chimico-fisica dei materiali e test di schermaggio in laboratorio	FSE € 24.000
CAMPALANI CARLOTTA (2018)	CHI M/ 06	Estrazioni green con CO2 supercritica di scarti di lavorazione del comparto confetturiero	FSE € 24.000
MANUEL MENEGHETTI (2018-2019)	CHI M/ 03	Sviluppo di celle fotovoltaiche DSSC per la produzione di energia elettrica mediante il recupero dei sottoprodotti derivanti dalle attività di lavorazione del vino	FSE + C/TERZI € 24.000+ 27000

ENRICHI FRANCESCO (2019)	FIS /01	Trattamento di manufatti artistici o di design con tecniche di sintesi di strati sottili nanostrutturati per la modifica delle proprietà delle superfici (lucentezza, rugosità, colore, opacità, durezza, stabilità, ...)	POR - FESR PROJECT RIR - TEMART € 23.786
CEDRIX JURGAL DONGMO FOUMTHUIM (2019) 24 MESI	FIS /03	Gel di peptidi autoassemblanti	PRIN 2017 GIACOMETTI 60000
SAORIN GLORIA (2019)	BIO /11	Studio di nuove molecole nell'ambito alimentare	POR - FESR PROJECT RIR 3S_4H 23.786
SENSI FRANCESCA (2019)	BIO /13	Sviluppo e applicazione di dispositivi nanotecnologici per la diagnosi e il trattamento di tumori solidi in modelli di coltura 3 D	MARGINI DI PROGETTI
WEHINGER BJORN (2019)	FIS /03	Trasporto e dinamica di spin nel regime terahertz	ERC PROJECT BONETTI
SOLE ROBERTO (2019)	CHI M/ 04	Messa a punto di metodologie e sistemi innovativi per la qualificazione di materie prime di origine naturale	POR - FESR PROJECT RIR 3S_4H 23.786

ANNEX II: Detailed list of international staff mobility

VISITING SCHOLARS

Period	From January to April 2017
Name	Elena Rodriguez-Aguado
Home institution	Universidad de Malaga, Spain
Research area	PE3 - DSMN Supervisor prof. Elisa Moretti)
Seminar activities	None
Funding Sources	External funds

Period	01/04/2017 – 30/09/2017
Name	Maísa Azevedo Beluomini
Home institution	Universidade de Araraquara, Brasil
Research area	PE4 - DSMN Supervisor prof. Paolo Ugo
Seminar activities	None
Funding Sources	External funds

Period	01/04/2017 - 30/09/2017
Name	André Luis Possan
Home institution	Universidade de Caxias do Sul, Brasil

Research area	PE4 - DSMN Supervisor prof. Ligia Maria Moretto
Seminar activities	None
Funding Sources	External funds

Period	05/06/2017 – 02/09/2017
Name	Paul Dupire
Home institution	Université de Nantes, France
Research area	PE3 - DSMN Supervisor prof. Achille Giacometti)
Seminar activities	None
Funding Sources	Erasmus

Period	20/09/2018 to 30/11/2018
Name	Petr Sulc
Home institution	Arizona State University, Tempe, USA
Research area	PE3 (DSMN Supervisor – Prof. Flavio Romano e Achille Giacometti)
Seminar activities	Coarse-grained modeling of RNA for nanotechnology and biology
Funding Sources	Ca' Foscari University grant

Period	01/07/2019 – 01/08/2019
Name	Argyropoulos Dimitri
Home institution	North Carolina State University (USA)
Research area	PE4 - DSMN Supervisor prof. Claudia Crestini
Seminar activities	“Examining the Structural Chemistry of Biomass Polymers”, “Large scale Biomass Processing Chemistry”, “Challenges and Opportunities with the Valorization of Lignin”
Funding Sources	None

Period	17/06/2019 – 14/08/2019
Name	Kohei Kusada
Home institution	Kyoto University, Japan
Research area	PE4 - DSMN Supervisor prof. Maurizio Selva
Seminar activities	Phase-Controlled Metal NPs for Catalytic Applications
Funding Sources	Ca' Foscari University grant

Period	08/04/2019 – 31/08/2019
Name	Rafael Luque Alvarez de Sotomayor
Home institution	Universidad de Cordoba, Spain

Research area	PE4 - DSMN Supervisor proff. Maurizio Selva, Alvise Perosa
Seminar activities	None
Funding Sources	External, FSE

Period	01/04/2019 – 30/04/2019
Name	Enrique Rodriguez Castellon
Home institution	Universidad de Malaga, Spain
Research area	PE4 - DSMN Supervisor prof. Elisa Moretti
Seminar activities	None
Funding Sources	External, FSE

Period	04/06/2019 – 04/07/2019
Name	John Russo
Home institution	University of Bristol, UK
Research area	PE3 - DSMN Supervisor prof. Flavio Romano
Seminar activities	Crystallization of Water from computer simulations
Funding Sources	External

Period	15/12/2019 – 14/12/2020
Name	Akhtar Farid
Home institution	Lulea University of Technology, Sweden
Research area	PE4 - DSMN Supervisor prof. Alberto Vomiero
Seminar activities	"Designing Novel Material with Structure Hierarchy at Various Length Scale", "High Entropy Alloys: theory, processing, properties and applications"
Funding Sources	Ca' Foscari University grant

VISITING PROFESSORS

Period	20/09/2018 to 30/11/2018
Name	Tatsuyoshi Ueno
Home institution	Kyoto Institute of Technology (KIT), Japan
Research area	PE3 – DSMN Supervisor prof. Alvise Benedetti
Teaching activities	Preparation and characterizations of ceramic system based on zirconium oxide
Funding Sources	None

Period	05/02/2019 to 30/09/2019
Name	Fabio La Mantia

Home institution	University of Bremen, Germany
Research area	Analytical chemistry, DSMN Supervisor prof. Salvatore Daniele
Teaching activities	Modeling of electrochemical systems and applications
Funding Sources	University

OUTGOING RESEARCHERS

Name	Ligia Maria Moretto
Researchc area	Analytic Chemistry
Host institution	Universidade Federal do Rio Grande do Sul - Brazil
Type and duration of mobility	Erasmus+ International Credit Mobility programme from 07/03/2017 to 06/04/2017

Name	Patrizia Canton
Researchc area	Physical Chemistry
Host institution	Institut National de la recherche Scientifique - Canada
Type and duration of mobility	Erasmus+ International Credit Mobility programme from 15/07/2017 to 06/08/2017

Name	Andrea Pietropolli Charmet
Researchc area	Physical Chemistry
Host institution	Institut National de la recherche Scientifique - Canada
Type and duration of mobility	Erasmus+ International Credit Mobility programme from 15/07/2017 to 06/08/2017

Name	Alvise Perosa
Researchc area	Green Chemistry
Host institution	University of Sidney - Australia
Type and duration of mobility	Overseas programme from 04/08/2017 to 05/08/2017

Name	Alvise Perosa
Researchc area	Organic Chemistry
Host institution	The University of Sydney - Australia
Type and duration of mobility	Erasmus+ International Credit Mobility programme from 27/09/2017 to 07/10/2017

Name	Maurizio Selva
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Researchc area	Green Chemistry
Host institution	Kyoto University - Japan
Type and duration of mobility	Overseas programme from 09/12/2017 to 17/12/2017

Name	Achille Giacometti
Researchc area	Condensed Matter physics
Host institution	The University of Sydney - Australia
Type and duration of mobility	Erasmus+ International Credit Mobility programme from 19/06/2018 to 29/06/2018

Name	Achille Giacometti
Researchc area	Condensed Matter physics
Host institution	Bar Ilan University - Israel
Type and duration of mobility	Erasmus+ International Credit Mobility programme from 01/07/2019 to 06/07/2019

Name	Alvise Benedetti
Researchc area	Physical Chemistry

Host institution	National University of Mongolia - Mongolia
Type and duration of mobility	Erasmus+ International Credit Mobility programme from 16/09/2019 to 26/09/2019

Name	Enrico Trave
Research area	Experimental Physics / Materials Science
Host institution	Kyoto University - Japan
Type and duration of mobility	Overseas programme from 21/10/2019 to 31/10/2019

Name	Elti Cattaruzza
Research area	Experimental Physics
Host institution	Bar Ilan University - Israel
Type and duration of mobility	Erasmus+ International Credit Mobility programme from 18/11/2019 -23/11/2019

RESEARCHERS ON SABBATICAL OR RESEARCH LEAVE WITHOUT MOBILITY

Name	Maurizio Selva
Research area	Green Chemistry

Type and duration of leave	Sabbatical leave partly funded by OCSE (within the cooperative project “Sustainable Valorisation of Non-Edible Residues of the Aquaculture and Fish Processing Industries: Learning from the Australian Standard” granted to Prof. Selva, # ja00101597), 11 months from Nov. 1, 2018 to Sept. 30, 2019, at the Universidad the Cordoba (Spain) and the University of Sydney (Australia)
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