

Plenary 3

The ten misunderstandings of green and sustainable analytical chemistry

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Green and sustainable analytical chemistry has gained tremendous momentum over the past decade, yet its progress is frequently hindered by persistent misconceptions, oversimplifications, and even myths. This contribution identifies and critically examines ten common misunderstandings that often obstruct the development of genuinely greener and more sustainable analytical methods. For instance, chemicals and solvents derived from renewable biomass are widely assumed to be inherently greener than petrochemicals [1]. However, their bio-origin does not guarantee safety or sustainability, as they may be energy-intensive, toxic, poorly biodegradable, or entangled in problematic land-use trade-offs [2]. For each of the ten misunderstandings, concrete counter-examples will be presented, highlighting the latest developments in the area. The goal is not to criticize past work, but to present latest developments, sharpen our collective thinking, and accelerate the meaningful adoption of green and sustainable practices in both academic and industrial laboratories [3]. A clearer understanding of what green and sustainable analytical chemistry truly entails, as well as a practical toolkit to identify and correct these misunderstandings is critical to accelerate the meaningful adoption of such practices in both academic and industrial laboratories. Our excitement about the environmental, health, and safety benefits of analytical chemistry must be tempered by a determination not to let the core principles be undermined by basic misunderstandings of what is genuinely green and sustainable.

References

1. E. Stampolaki et al., *TrAC Trends Anal. Chem.*, vol. 194, p. 118531, 2026.
2. E. Psillakis, *Anal. Bioanal. Chem.*, Trends, 2026.
3. E. Psillakis, *TrAC Trends Anal. Chem.*, vol. 191, p. 118371, 2025.