

Science: A Truth Worth Defending

by Paul T. Anastas, Yale University, USA

Science and scientific institutions face growing skepticism said Paul T. Anastas in his plenary talk. He called for a critical and honest reflection: Why does science now need defending?

Citing Einstein's assertion that "the right to search for the truth implies also a duty," Anastas argues that ethical conduct and integrity must remain central to science. But the need to preserve and protect science goes beyond defending its credibility—it requires understanding why it is under attack in the first place.

Historically, science emerged from resistance. The Scientific Revolution challenged entrenched beliefs and often faced accusations of heresy. Over centuries, science transformed into a dominant force of knowledge—what some have called a new orthodoxy. But with power comes scrutiny, and Anastas urges us to examine whether modern science's methods, culture, or institutions may themselves contribute to public distrust.

Do individuals or institutions feel threatened by scientific findings? Are political, ideological, or economic forces driving the backlash? Is science too often perceived as elitist, opaque, or disconnected from public concerns?

Anastas does not simply lament the erosion of public trust. Instead, he challenges the scientific community to confront uncomfortable truths about itself. Introspection, he suggests, is essential—not only to restore confidence but to build a science that truly serves society.

By asking hard questions and acknowledging past shortcomings, science can be strengthened—not weakened. The path forward lies not in defensiveness, but in openness, accountability, and a renewed commitment to the values that made science a trusted pursuit in the first place. In doing so, we affirm that science is not just worthy of protection—it is worthy of the public's belief, engagement, and support.

Building Trust in Science: A Two-Way Commitment

by Peter Mahaffy, The King's University, Edmonton, Canada

Restoring trust in science requires more than correcting misinformation—it demands that scientists understand their audiences and that science itself is demonstrably worthy of trust said Peter Mahaffy in his plenary talk. He argues that effective science communication



David Winkler, Peter Mahaffy, and Elizabeth Hall

must move beyond the outdated "deficit model," which assumes public mistrust stems from a lack of knowledge. Instead, scientists must engage with the public's values, perspectives, and lived experiences.

Drawing from his work with IUPAC and other international bodies, Mahaffy emphasizes that science communication should be rooted in mutual understanding. A key reference is the IUPAC Project *Chemists and "The Public"* (2008), [1] which highlights how scientists can better connect with diverse audiences by applying systems thinking and acknowledging context—critical in combating the spread of misinformation.

Equally important is ensuring science remains trustworthy. Mahaffy highlights global initiatives like the International Science Council's *Principle of the Universality of Science*, which balances the freedom to conduct research with the responsibility to uphold ethical standards. This principle was refined to reinforce that scientific freedom must go hand-in-hand with accountability.

Ethical practice in chemistry is central to Mahaffy's message. The *Hague Ethical Guidelines*, developed by chemists worldwide, underscore the importance of safeguarding science from misuse, particularly in light of the Chemical Weapons Convention. Similarly, the IUPAC CEDEI task force has developed *Guiding Principles for the Responsible Practice of Chemistry*, that was formally launched at the 2025 World Chemistry Congress in Malaysia. These principles aim to foster a culture of integrity, transparency, and public engagement.

Mahaffy's vision for building trust in science is clear: scientists must listen as much as they speak, commit to ethical conduct, and embrace responsibility as part of their professional identity. Only then can science