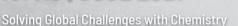
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Strengthening the role and relevance of the chemical sciences for the future of our planet: Systems thinking in chemistry education

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Abstract

The material basis of our society and economy underlies considerations of how present and future generations can live within the limits of the natural world. Chemistry, as the science that focuses on understanding the structure and properties of matter, has a central role to play in building a sustainable future for our planet. But achieving that challenging sustainability goal requires concerted blending of chemistry's contributions into a convergence of ideas, approaches, and technologies from other disciplines. And, within chemistry, the fields of education, research, and practice also need to converge for both current and future chemical science professionals to successfully drive change. One promising approach to realize those convergences is systems thinking, a framework that can bring disciplines together in new ways and connect chemistry to the sustainability of earth and societal systems. We will discuss a concrete example of incorporating systems thinking into chemistry education that builds on the chemistry of reactive nitrogen and ammonia, which is a commodity of fundamental importance to many aspects of human activity and to chemical industry. We will also connect this approach to work of a global IUPAC project, "Systems Thinking in Chemistry for Sustainability: Toward 2030 and Beyond (STCS 2030+)."

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