Green Chemistry, the Sustainability Pendulum and the Circular Economy

J. C. Warner, Lowell/US

Prof. Dr. John C. Warner, Warner Babcock Institute for Green Chemistry, 116 John Street, Suite 415, Lowell/US

The materials economy can be thought of as a pendulum with the field of chemistry at its apex. In one direction, the human-built world manifests through manufacturing and recycling. In the other direction, the natural world is a combination of extraction and degradation. The overlap between these two termini of the pendulum is a useful quantitative assessment of sustainability. This presentation will describe the 5 embedded cycles of use/reuse, assembly/disassembly, materials metabolism, regeneration and stable ecosystems. Examples from both the human-built world and the natural world will be presented to illustrate the issues and opportunities for green chemistry to design a sustainable future.