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Environmental Science and Chemistry: Addressing Global Sustainability



1: Low-carbon Energy Economy

Scientific and Technological Impact

- Photovoltaics (PV).
- Hydrogen generation, transport, and storage.
- Nuclear Energy
- Materials for waste heat capture and conversion
- Batteries and storage

Relevance to STS

- AI/ML/Automation/Accelerated Materials Development
- Interfacial Dynamics
- Hierarchical system imaging
- In situ/operando/

2: Sustainable Chemistry and Industry

Scientific and Technological Impact

- Chemical Separations
- Carbon Capture and Conversion, Utilization and Storage
- Sustainable Manufacturing
- Computing Revolution

Relevance to STS

- AI/ML/Automation/Accelerated Materials Development
- Interfacial Dynamics
- Hierarchical system imaging
- In situ/operando/
- integrating modeling/simulations with data acquisition

3: Food, Water, and Resource Resilience

Scientific and Technological Impact

- Agriculture
- Water
- Critical Materials

Relevance to STS

- AI/ML/Automation/Accelerated Materials Development
- Interfacial Molecular Dynamics
- mapping of hierarchical structures in devices and natural systems 3D imaging with scattering/ spectroscopy accessible in voxels)
- In situ/operando/
- integrating modeling/simulations with data acquisition