

國際競爭重點領域_次世代智能材料發展中心

R&D Center for Smart Materials

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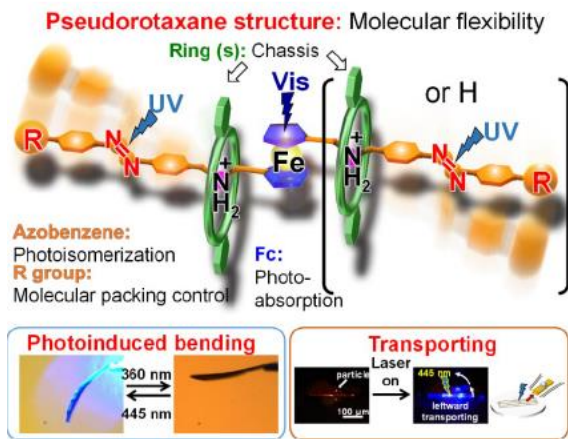
The Research and Development Center for Smart Materials gathers researchers focusing on designs and synthesis of responsive, self-healing, memory and smart materials with designed and well-controlled chemical and physical structures and their applications. Some selected materials and highlighted results include:

- (1) Stimuli-responsive and self-healing materials, including azo- and ferrocene-based photo-responsive materials for molecular sensors and machines, disulfide and Diels-Alder bonded polymers showing thermally-responsive behaviors for smart coatings and artificial skins, supramolecular material from dendrimer-surfactant complexes, and nano-structured mechanical metamaterials for enhanced energy dissipation.
- (2) Smart materials and systems for biomedical and bioengineering, including self-amplifying RNA (SaRNA) as vaccine development platforms, microfluidized systems for continuous manufacturing of next generation biomaterials, intelligent chemical processes, and smart materials and digital light process-additive manufacturing for 3-D Liver Lobule regeneration.
- (3) Novel materials for energy systems, including highly efficient catalysts for hydrogen production and novel materials as electrodes/electrolytes for next generation batteries.

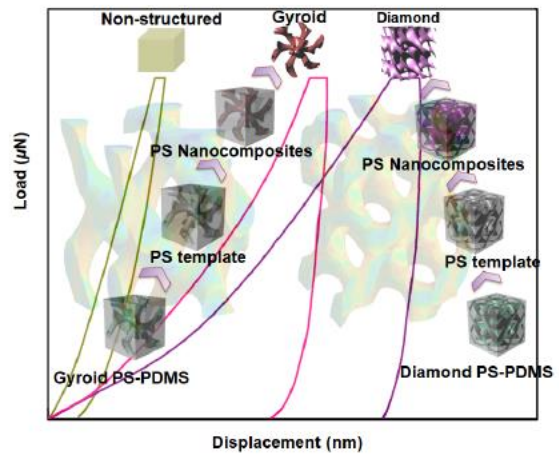
Moreover, interdisciplinary and vertically-integrated research teams have been established and showed noteworthy performance.

References

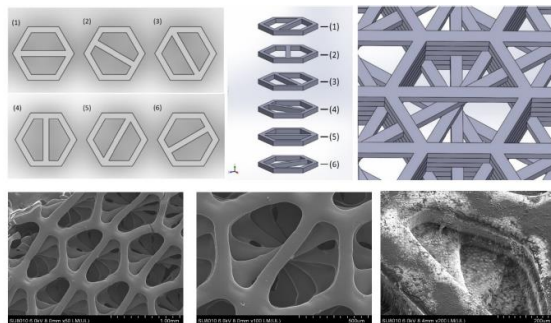
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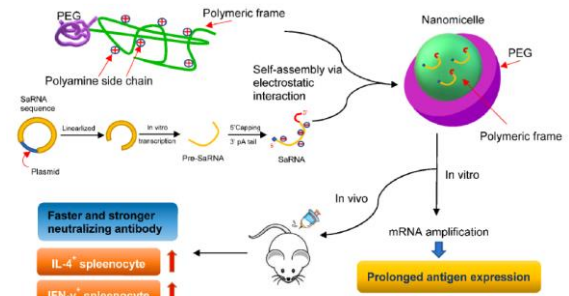
Azo- and ferrocene-based photo-responsive materials for molecular sensors and machines



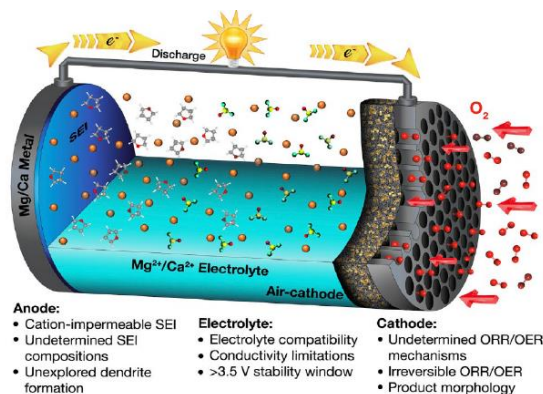
Nano-structured mechanical metamaterials for enhanced energy dissipation



Biodegradable scaffolds for liver lobule regeneration via digital light process-additive manufacturing



Self-amplifying RNA (SaRNA) as vaccine development platforms.



Novel materials as electrodes/electrolytes for next generation batteries.



Continuous manufacturing of next generation biomaterials