



US National Academy of Engineering



Chinese Academy of Engineering

2019 China-America Frontiers of Engineering Symposium

New Materials Session



Session Co-Chairs

LaShanda Korley, University of Delaware

Yong Xiang, University of Electronic Sci & Tech of China

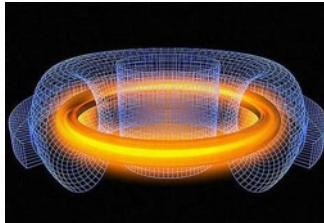
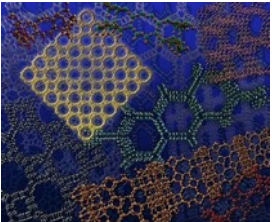
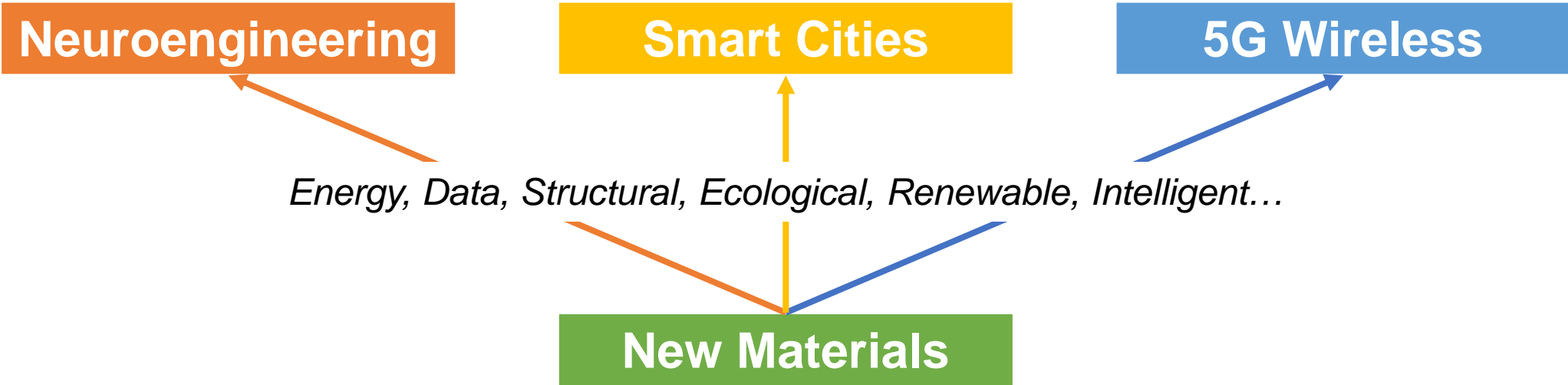


June 20-22, 2019

San Diego, California

NEW MATERIALS

New materials are the building blocks enabling all modern technologies, but often also the bottlenecks...



NEW MATERIALS

- Catalyst design
- Sustainable material routes
- Smart systems
- Information technology
- Bio-inspiration
- Advanced characterization
- Innovative processing
- Computation/machine learning



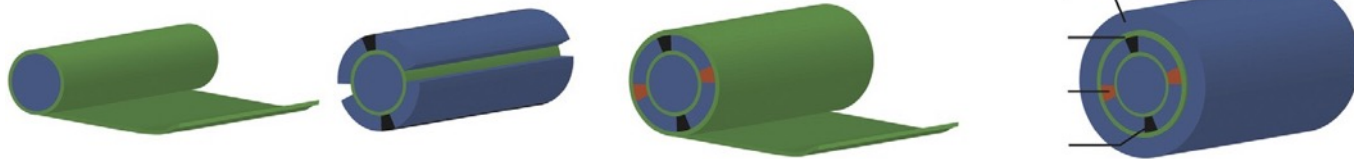
Figure by Ruby Wright <http://www.rubywright.com>
Materials for the 21st century: What will we dream up next?. MRS Bulletin, 40 (12), 1188-1197.
doi:10.1557/mrs.2015.267
<https://qeprize.org/createthefuture/materials-for-the-21st-century/>

NEW MATERIALS



Graphene

<https://www.newyorker.com/magazine/2014/12/22/material-question>



Multifunctional fibers

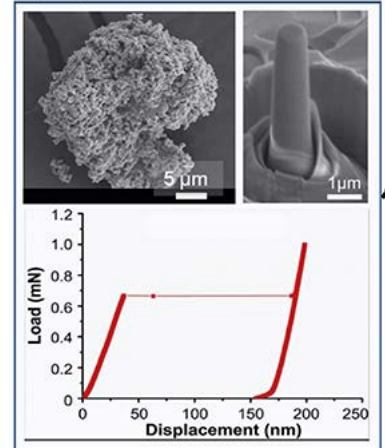
doi:10.1038/nbt.3093



Piezoelectrics

<https://www.media.mit.edu/projects/masca/overview/>

A) Experimental Data Collection

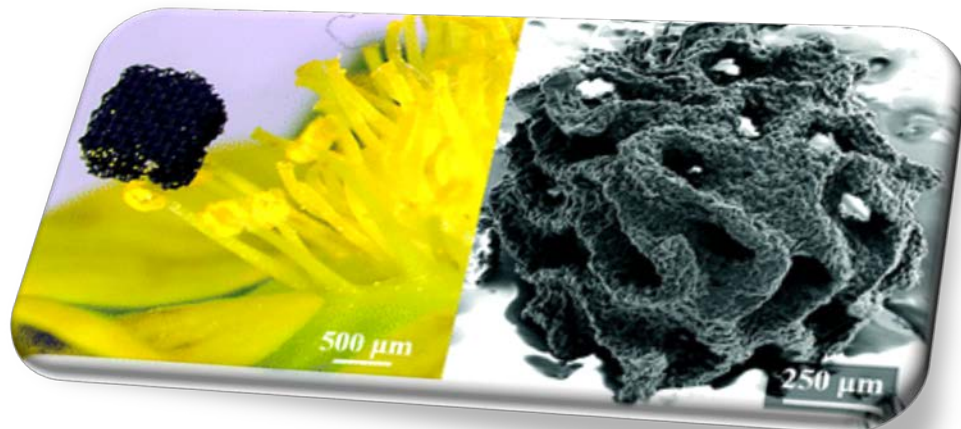


Granular Materials

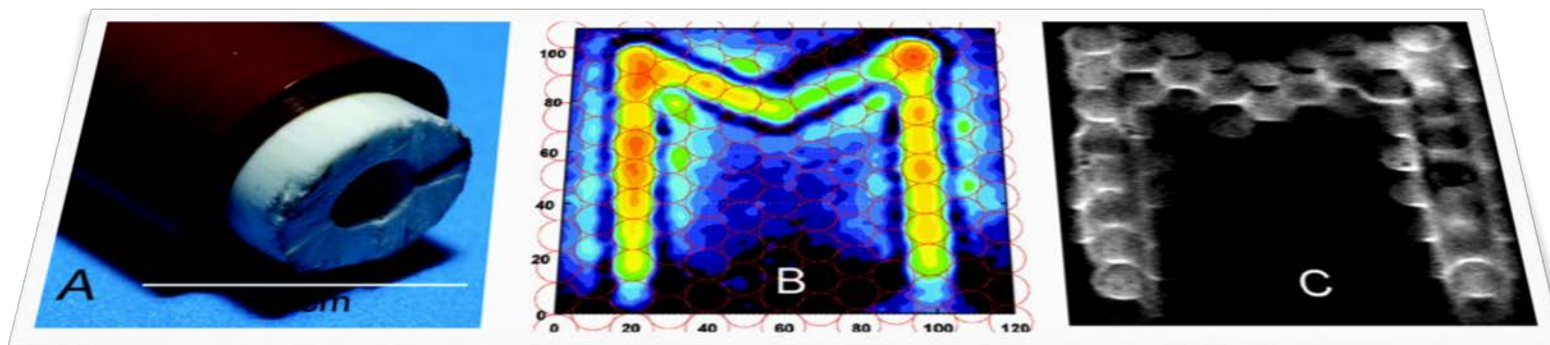
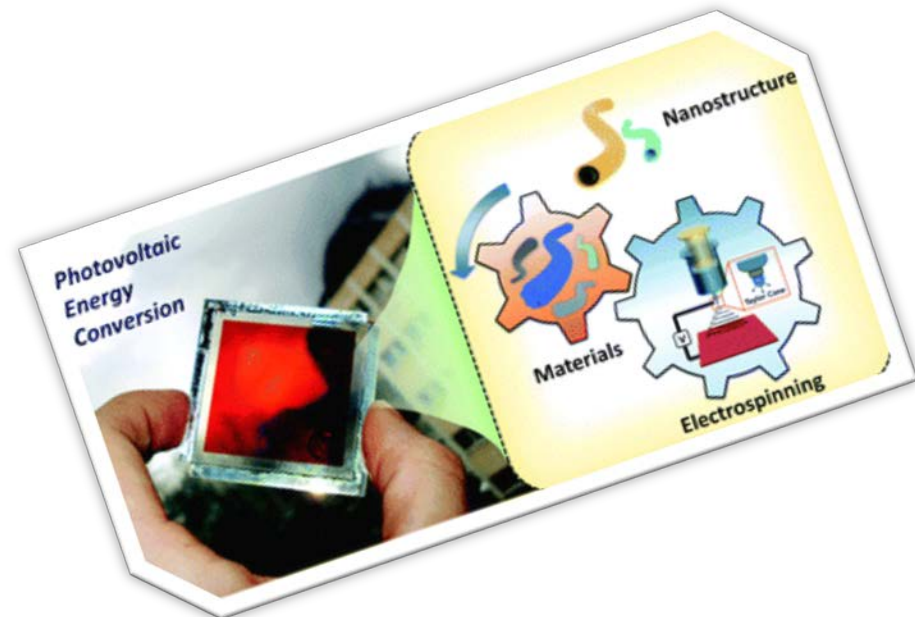
<https://isn.mit.edu/project-14-superelastic-granular-materials-impact-absorption>

NEW MATERIALS

J. Mater. Chem. C, 2016, 4, 10173-10197



Mater. Horiz., 2018, 5, 1035-1041



Science, 2004, 305, 788-792

NEW MATERIALS



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LaShanda Korley, University of Delaware

Yong Xiang, University of Electronic Sci & Tech of China



Jia Zhu, Nanjing University
*Personalized Water
Solutions and Beyond*



Christopher Bettinger, CMU
*Biomimetic Underwater
Adhesives*



Elizabeth Cosgriff-
Hernandez, UT Austin
*Additive Manufacturing of
Complex Materials*



Feng Tian, Phomera
Metamaterials Inc.
*A General Method for
Producing Flexible
Metamaterials*