

Understanding Magnetic Nanostructures with Soft X-rays

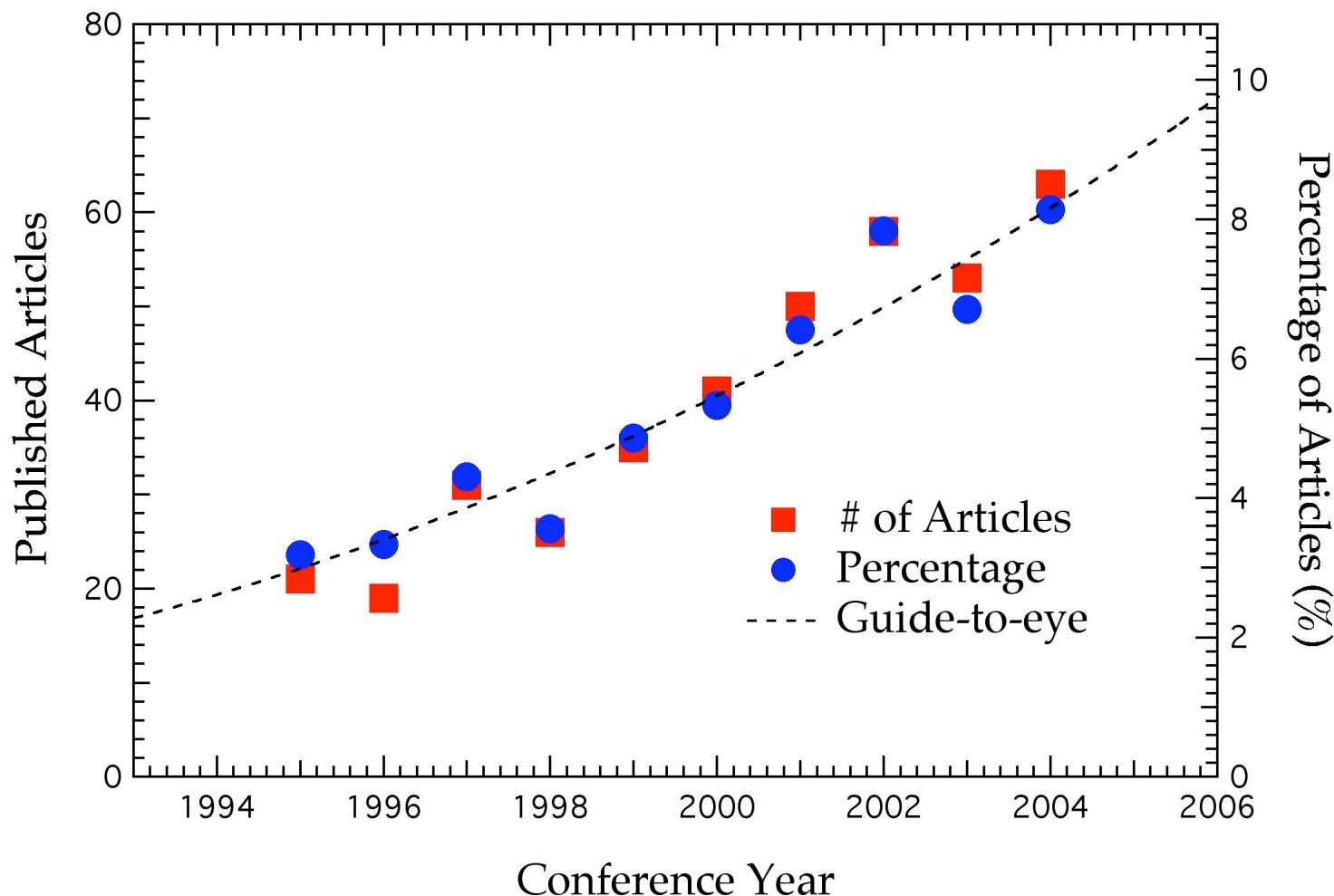
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Physics Dept., Montana State Univ.



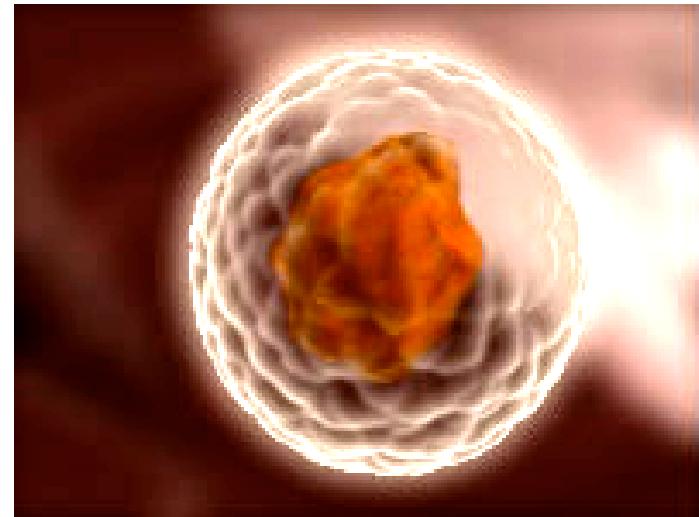
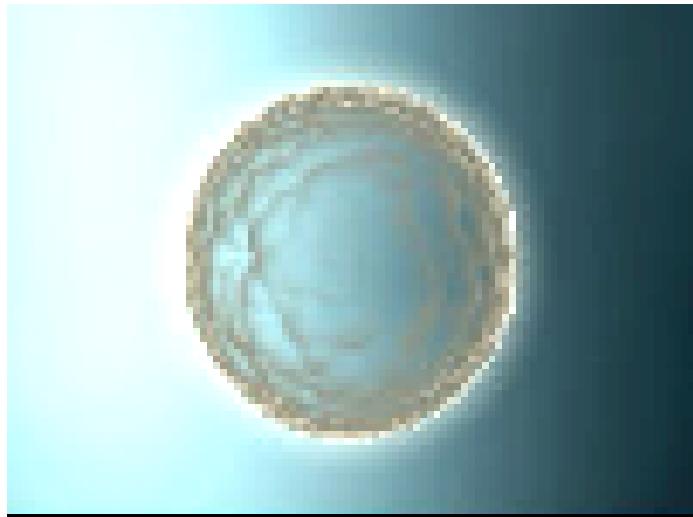
National Synchrotron Light Source

IMPACT

Manuscripts Generated from the
Magnetism and Magnetic Materials Conference
Containing Synchrotron Research (J. of Appl. Phys.)



Synthesis of Nanoparticles

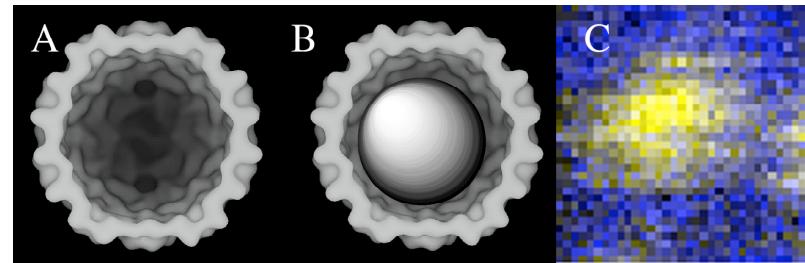
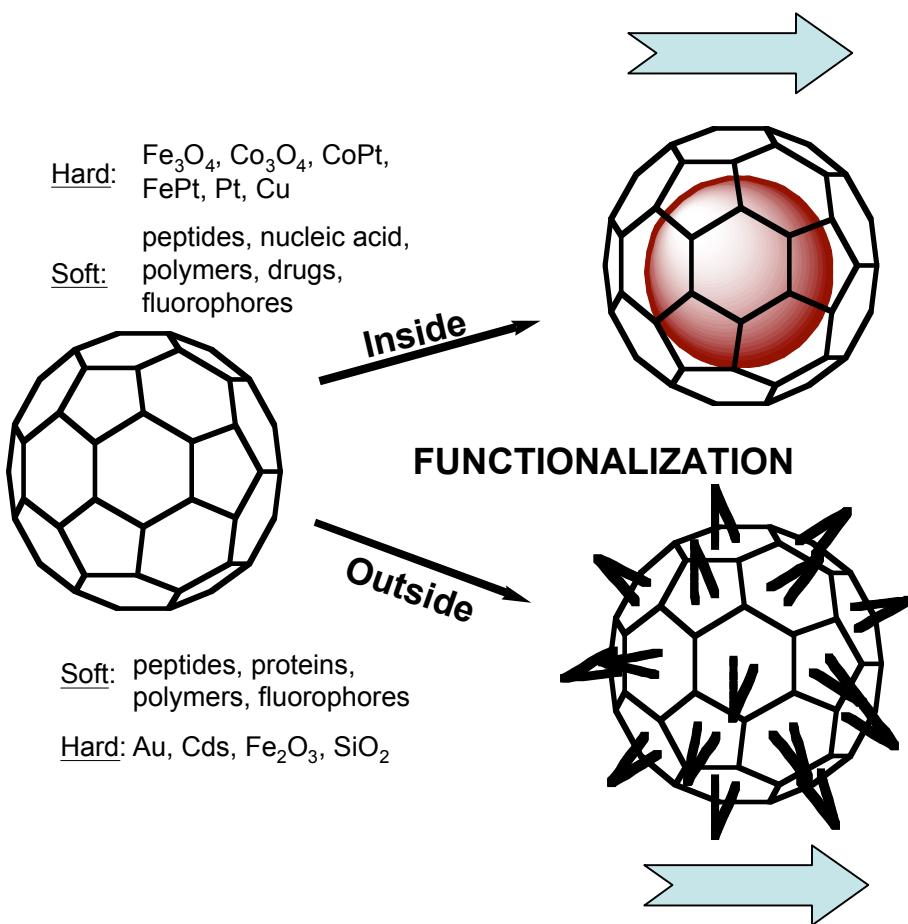


*Empty protein cages
are batch-produced
through fermentation*

*Cages are infiltrated
with material of choice*

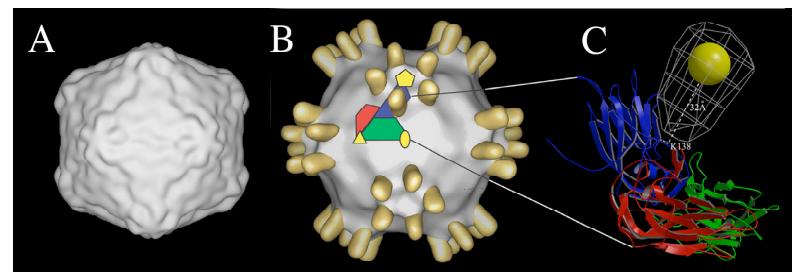
- Protein cage constrains particle size
- Interior and exterior can be used to further modify behavior of materials

Multifunctional Nanomaterials

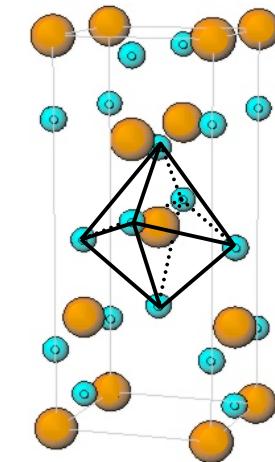
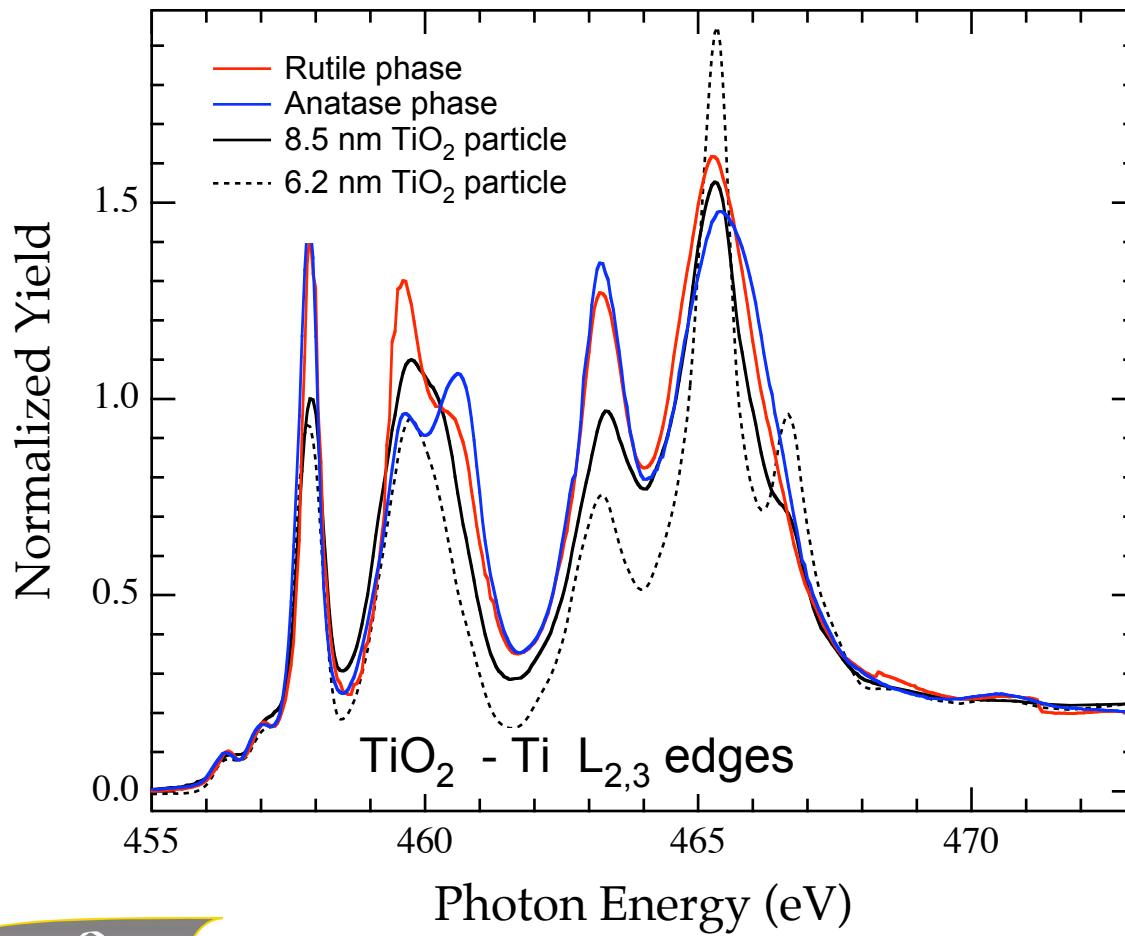


Empty protein cages are batch-produced through fermentation then mineralized with material of choice.

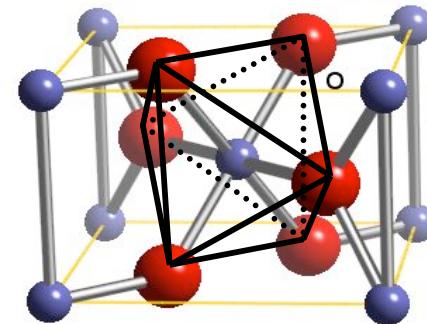
Exteriors are functionalized by genetic engineering for added utility.



Identifying Structures - TiO_2



Anatase Structure



Rutile Structure



Diffuse X-ray Resonant Magnetic Scattering (XRMS) of a Co/Cu Multilayer

