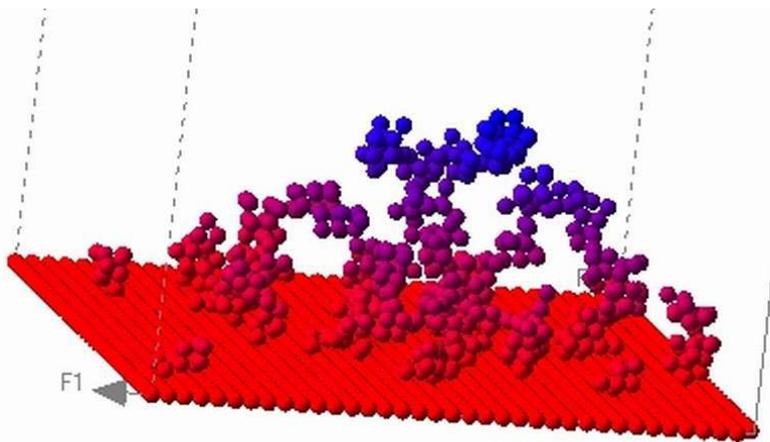


Low cost porous films from nanoparticles

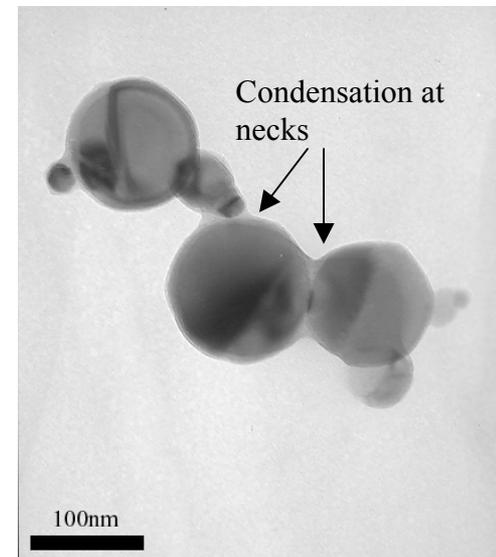
Sheryl H. Ehrman, University of Maryland, DMR-0093649



3-D model of deposition process

We are studying processes for making films from these inexpensive materials; deposition followed by either annealing and capillary condensation. Both potentially can deliver mechanically strong films with minimal loss of surface area.

Titania nanoparticle agglomerates, which can be made in a low cost aerosol process, can be used in inexpensive solar cells to generate electricity, as photocatalysts to reduce pollution, and as gas sensors.



Transmission electron micrograph of capillary condensation results

Bringing powder to the people!

Sheryl H. Ehrman, University of Maryland, DMR-0093649

Five undergraduate students, and three graduate students have contributed to this work. In addition to research, we have been active in outreach. For nanotechnology to make an impact, future scientists need to be inspired, perhaps by understanding how it can impact them directly. Here, we are working with incoming female freshman students majoring in math, the physical sciences or engineering to construct a working solar cell from titania nanoparticles. Additional support for this activity came from NSF through its Program for Research on Gender in Science and Engineering (HRD-0120786).



In addition, for the past three years, the PI and graduate students have participated in Career Day at Bell Multicultural High School, in Washington, DC, talking with students about careers in science and engineering research.

