

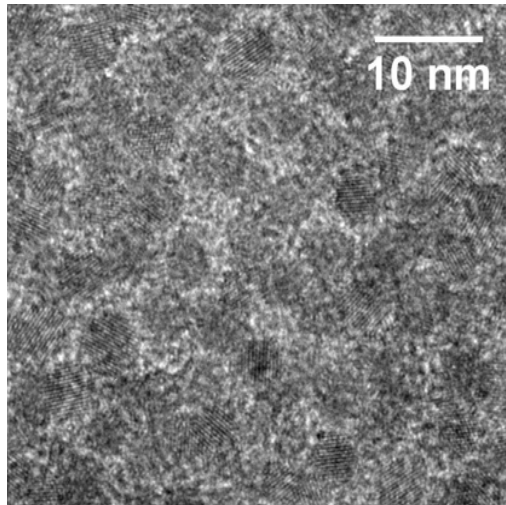
Germanium Nanocrystal Films for Photovoltaic Applications

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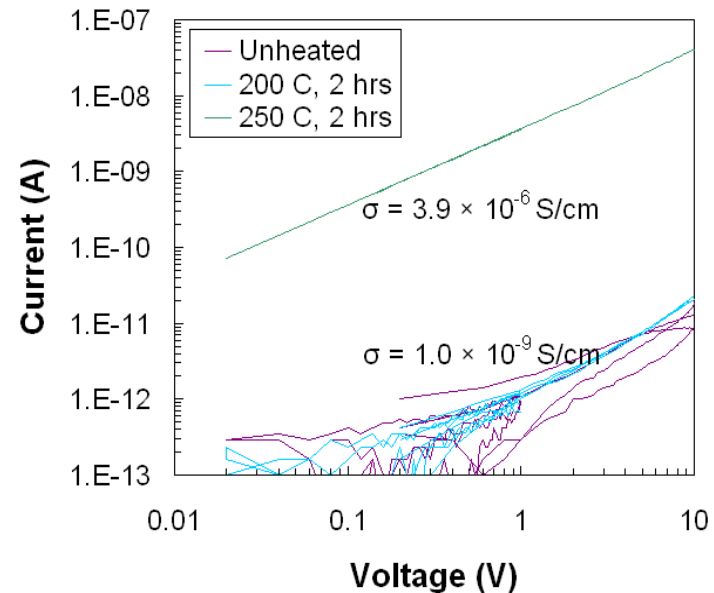
NNIN Facilities utilized: Characterization Facility & Nanofabrication Center

- GOAL: Develop conductive thin germanium nanocrystal films for device applications.
 - ◆ Germanium nanocrystals are synthesized in a non-thermal plasma reactor
 - ◆ 1-Dodecene molecules are attached to the particle surfaces
 - ◆ Films are cast and electrical measurements are made



MAJOR OBSERVATIONS

- ◆ Uniform, dense films of germanium nanocrystals are formed
- ◆ As-produced films are insulating
- ◆ Low-temperature (250° C) annealing increases the conductivity by ~3 orders of magnitude to $\sigma \sim 10^{-6}$ S/cm



PUBLICATIONS

- ◆ R. Gresback, Z. Holman, and U. Kortshagen, *Appl. Phys. Lett.* **91**, 093119 (2007).