# Germanium Nanocrystal Films for Electronic Applications

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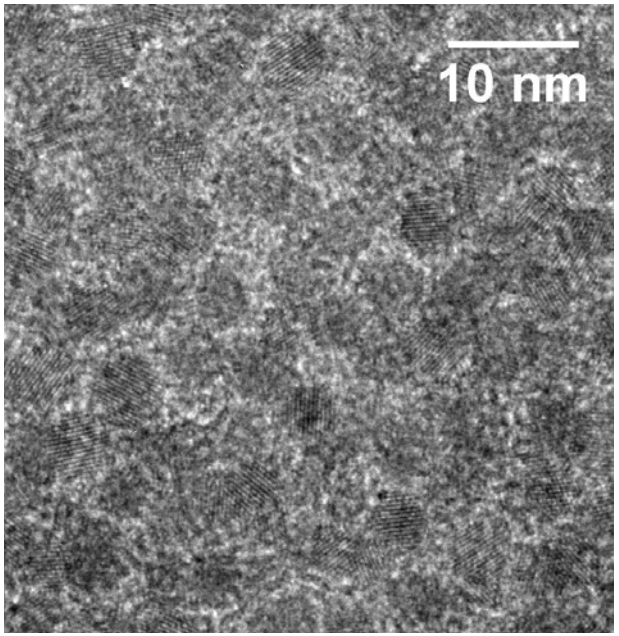
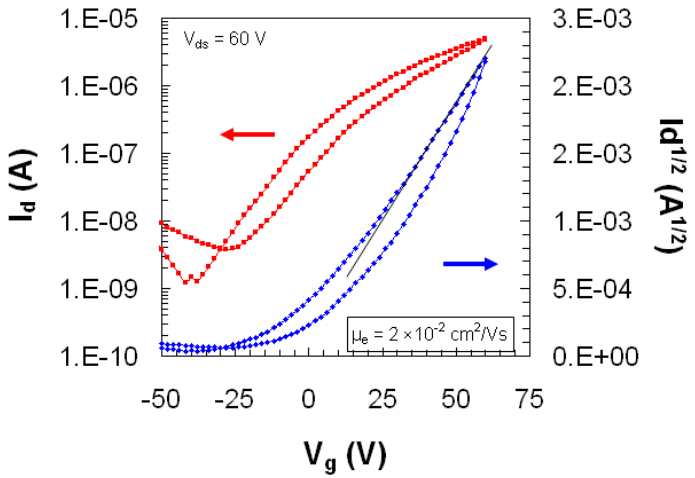
- GOAL: Develop germanium nanocrystal films for device applications.
  - Germanium nanocrystals are synthesized in a non-thermal plasma reactor
  - Films are formed by either transferring the crystals into solution and spin-coating, or impacted the crystals onto substrates directly downstream of the plasma




- MAJOR OBSERVATIONS
  - Uniform, dense films of germanium nanocrystals are formed
  - *n*-type, ambipolar, and *p*-type FET devices have been fabricated with mobilities of $10^{-2}$ $cm^2/Vs$
  - Nanocrystal films have been patterned with lift-off procedures yielding features smaller than 2 µm




- PUBLICATIONS
  - R. Gresback, Z. Holman, and U. Kortshagen, *Appl. Phys. Lett.* **91**, 093119 (2007).
  - U. Kortshagen, R.Gresback, Z. Holman, R. Ligman, C.-Y. Liu, L.Mangolini, and S. Campbell, *Pure Appl. Chem.* **80**, 1901 (2008).
  - Z. Holman and U. Kortshagen, *Langmuir* **25**, 11883 (2009).