# Nanotechnologists' new plastic can see in the dark

## Infrared-sensitive material could lead to better use of solar spectrum

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by Sonnet L'Abbé

Imagine a home with "smart" walls responsive to the environment in the room, a digital camera sensitive enough to work in the dark, or clothing with the capacity to turn the sun's power into electrical energy. Researchers at University of Toronto have invented an infrared-sensitive material that could shortly turn these possibilities into realities.
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U of T electrical and computer engineering graduate student Steve MacDonald carried out many of the experiments that produced the world's first solution-processed photovoltaic in the infrared. "The key was finding the right molecules to wrap around our nanoparticles," he explains. "Too long and the particles couldn't deliver their electrical energy to our circuit; too short, and they clumped up, losing their nanoscale properties. It turned out that one nanometer – eight carbon atoms strung together in a chain – was 'just right'."

Other members of the U of T research team are Gerasimos Konstantatos, Shiguo Zhang, Paul W. Cyr, Ethan J.D. Klem, and Larissa Lavina of electrical and computer engineering; Cyr is also with the Department of Chemistry. The research was supported in part by the Government of Ontario through Materials and Manufacturing Ontario, a division of the Ontario Centres of Excellence; the Natural Sciences and Engineering Research Council of Canada through its Collaborative Research and Development Program; Nortel Networks; the Canada Foundation for Innovation; the Ontario Innovation Trust; the Canada Research Chairs Programme; and the Ontario Graduate Scholarship.

**Contact:**

Professor Edward H. Sargent,
Nortel Networks – Canada
Research Chair in Emerging

Technologies, (416) 946-5051; e-mail: ted.sargent@utoronto.ca