# Inspired by moth eyeballs, chemists develop gold coating that dims glare

April 4 2014

Moth eyeballs are made up of tiny cones that reduce glare. UC Irvine researchers copied the pattern on a new, flexible material and coated it with a bit of gold to make a product that could improve solar panels, LED displays and disguising of weapons. Credit: George Hodan

(Phys.org) —All that's gold does not glitter, thanks to new work by UC Irvine scientists that could reduce glare from solar panels and electronic displays and dull dangerous glints on military weapons.

"We found that a very simple process and a tiny bit of gold can turn a transparent film black," said UC Irvine chemistry professor Robert Corn, whose group has created a patterned polymer material based on the findings, documented in recent papers. The postdoctoral associates and students were initially worried when they noticed what appeared to be soot on a flexible film they were designing to coat various products.

Via painstaking tests, though, the researchers realized that they'd accidentally discovered a way to fabricate a surface capable of eliminating glare, as reported in *Nano Letters*. They also learned that the material can keep grime in raindrops and other moisture from sticking, as reported in *ACS Applied Materials & Interfaces*.

To do it, the group etched a repeating pattern of cones modeled on moth eyeballs at the nanoscale on Teflon and other nonstick surfaces. They then applied a thin layer of gold over the cones and, voila, the shine from the gold and any light reflecting onto it was all but obliterated. The material is also highly hydrophobic, meaning it repels liquids.

Angry residents of Newport Beach, Calif.; certain cities in England and Australia; and elsewhere have complained vociferously about neighbors installing highly reflective solar panels that unintentionally beam blinding sunlight onto their properties. In addition, troops risk enemy detection when sunshine bounces off weaponry. And cellphone displays can be unreadable in bright light. The new coating could solve these issues.

UC Irvine's Office of Technology Alliances has filed a patent application for the work. "We're excited about where this technology might lead and who could be interested in exploring the commercial opportunities that this new advancement presents," said senior licensing officer Doug Crawford.