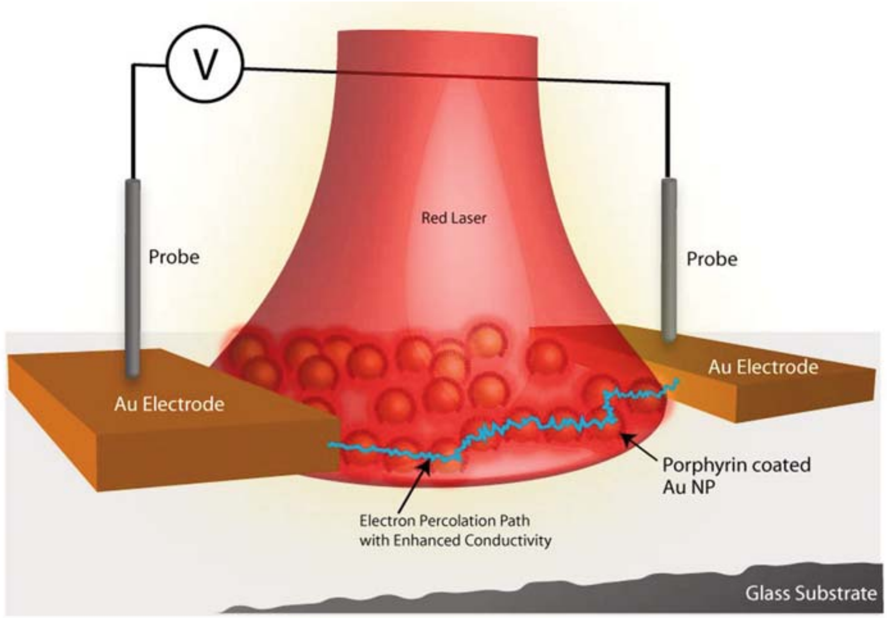

Figure 1. A schematic of a hybrid molecular device shows metal electrodes connected by a percolation pathway composed of dithiol-PZn_3-coated Au nanoparticles.

tronic characteristics optimal for coupling Au surface plasmons. Scanning electron micrographs were used to compare array morphologies of uncoated 16-nm, 32-nm, and 46-nm Au nanoparticles, which displayed areal coverages of 52%, 54%, and 46%, respectively, and conductivities much lower than metal films because only a fraction of the nanoparticles provide conducting pathways. Dithiol-PZn_3 adsorption onto the 16-nm and 32-nm Au nanoparticles results in much higher conduction that displayed Arrhenius behavior. The researchers said that the 46-nm nanoparticle-array densities are below the critical point for percolation.

The researchers observed much larger photocurrents (which are absent in arrays of uncoated Au nanoparticles) in a device consisting of 32-nm, dithiol-PZn_3-coated Au nanoparticles when illuminated with red light (655 nm) than when illuminated with blue (405 nm) or green (532 nm) light. The photocurrents are not simply proportional to the extinction coefficients at red, blue, and green wavelengths. The researchers attribute the anomalously large photocurrent observed at 655 nm to optical focusing and increased photon flux resulting from coupled surface plasmons. The researchers said, "Since molecular compounds exhibit a wide range of optical and electrical properties, the strategies for fabrication, testing and analysis elucidated in this paper can form the basis of a new set of devices in which plasmon-controlled electrical properties of single molecules could be designed with wide implications to plasmonic circuits and optoelectronic and energy harvesting devices."

STEVEN TROHALAKI

News of MRS Members/Materials Researchers

John Joseph Gilman, Adjunct Professor of Materials Science and Engineering at the University of California—Los Angeles, died on September 10, 2009. Jack's persona is gone but all MRS members should know that Jack and his record of accomplishments in Materials Science and Engineering will be remembered. The many accomplishments, both in academia and industry, have been very positively commented-on already in a number of reports: M.A. Meyers and S.M. Walley, "In Memory of TMS Fellow John Gilman, 1925–2009," *JOM*, p. 8 (November 2009); and, a tribute prepared for the National Academy of Engineering by Jack's colleague, J.D. Mackenzie, "Professor John J. Gilman," also delivered at a Memorial Lecture organized by Jenn-Ming Yang, at the Department of Materials Science and Engineering, UCLA, January 22, 2010.

Among our shared reminiscences about Jack is the recurring thought that many conference speakers, including past MRS Symposium ones and new ones to come, will not be kept "higher on their toes" because of Jack being absent from languishing comfortably in a front row seat until rising and pursuing a probing posture during the ensuing question period! John Mackenzie reports that the UCLA students lauded such educationally-benefitted questioning at their own departmental seminars. And then there is the wider research coverage of Jack Gilman's own multiple research articles and conference presentations, spanning the topics of his book titles: *Micromechanics of Flow in Solids* (1963); *Inventivity: The Art and Science of Research Management* (1992); *Electronic Basis of the Strength of Materials* (2003); and, most recently, *Chemistry and Physics of Mechanical Hardness* (2009). The latter book brings to mind Jack's pioneering article "Hardness: A Strength Microprobe" in *The Science of Hardness Testing and Its Research Applications*, edited by J.H. Westbrook and H. Conrad (ASM, Metals Park, OH, 1973) pp. 51–74. *MRS Bulletin* and the *Journal of Materials Research* readers will note the foresighted connection with modern capabilities being reported on methods of nanoindentation hardness testing.

The National Academy of Engineering cited Jack Gilman's "contributions to dislocation behavior of ceramics, disclination behavior of polymers, and leadership in development and production of metallic glasses." The longevity of his work is already indicated, for example, through use made in university course instructions of measurement techniques reported for cleavage surface energy determinations and dislocation velocity estimations. As indicated in the 2003 book title, a particular interest of Jack's was to make quantitative connection between electronic forces at the atomic or molecular level and the macroscopic plasticity and fracturing properties of materials—a goal unquestionably nearer in this 21st century because of his persistent research endeavors.

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