Albert Polman to receive MRS Innovation in Materials Characterization Award

Albert Polman, a scientific group leader at the FOM Institute AMOLF, The Netherlands, has been honored with the Materials Research Society (MRS) Innovations in Materials Characterization Award for "the development, application and co mmercialization of Angle-Resolved Cathodoluminescence Imaging Spectroscopy (ARCIS) as a new tool for optical imaging at the nanoscale, with applications in nanophotonics and materials science in general." He will present his award talk at the 2014 Materials Research Society Spring Meeting in San Francisco on April 23 at 12:45 p.m. in Salon 7 of the Marriott Marquis. The award is endowed by Toh-Ming Lu and Gwo-Ching Wang.

The plasmonics and nanophotonics community has been struggling with spatial imaging and k-space resolved light modes for decades. Polman's imaging technique enables a conventional scanning electron microscope to be transformed into a microscope that allows plasmonic and photonic modes to be mapped with nanoscale spatial resolution. With its deep-subwavelength spatial resolution, the ARCIS technique exceeds the diffraction limit by a factor of 10–20 for visible light and by nearly a factor of 100 for near-infrared light. This technique is useful in broad areas of materials research including integrated optics, semiconductor optics, metamaterials, photovoltaics, photocatalysis, geology, and petrology. The technique is being commercialized by the start-up company Delmic, and Polman now operates his ARCIS system as a user facility.

Polman obtained his BSc (1981), MSc (1985), and PhD (1989) degrees from the University of Utrecht. He has over 230 publications and is co-inventor on five patents. He is a member of the Royal Netherlands Academy of Arts and Sciences, a Fellow of MRS, and recipient of an ERC Advanced Investigator Grant (2010), the ENI Renewable Energy Prize (2012), and the Physica Prize of the Dutch Physical Society (2014).

Lei Jiang to receive Mid-Career Researcher Award for bioinspired materials

The Materials Research Society (MRS) has named Lei Jiang, a professor at the Institute of Chemistry within the Chinese Academy of Sciences, to receive the Mid-Career Researcher Award for "establishing fundamental understanding of the interfacial properties of biological systems and transforming that insight into commercialized bioinspired materials with properties better than those of natural systems." Jiang will present his award talk at the 2014 Materials Research Society Spring Meeting in San Francisco on April 22 at 12:45 p.m. in Salon 7 of the Marriott Marquis. The Mid-Career Researcher Award, endowed by Aldrich Materials Science, recognizes exceptional achievements in materials research made by mid-career professionals.

Jiang uses his study of the interfacial properties of biological systems to design and fabricate bioinspired systems. For example, his study of the self-cleaning behavior of fish scales moved the field of materials with special wettability from focusing on a liquid/air/solid three-phase system to a liquid/liquid/solid three-phase system, and enabled the development of next-generation superoleophobic materials. Using the strategy designed by his research group, Jiang and his colleagues were also able to generate a series of composite materials that have combinations of super-hydrophobic, hydrophilic, lipophilic, and oleophobic properties, with the switch between them triggered by light, electric charge, heat, or chemical reactions.

This work has led to commercialized technologies such as self-cleaning fabrics as well as self-cleaning coatings on large buildings, including the China National Grand Theatre, the Olympic Basketball Stadium, and Terminal 3 of Beijing International Airport.

Jiang received his BS (1987), MS (1990), and PhD (1994) degrees from Jilin University. He served as Dean of the School of Chemistry and Environment at BeiHang University. Jiang has published over 400 articles, authored books and book chapters, and holds 40 patents. He is a member of the Chinese Academy of Sciences, a member of the World Academy of Sciences, and he is a Fellow of the Royal Society of Chemistry.

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