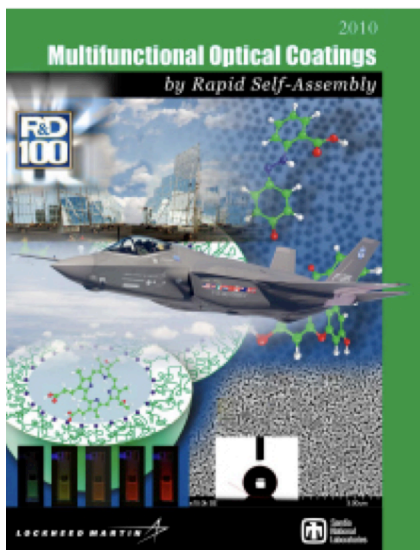


Sandia Researchers Score MRS “Outstanding” Rating Two Years Running

Sandia researcher Hongyou Fan (1815) was honored for his “outstanding poster” at the 2013 Spring Meeting of the Materials Research Society (MRS) in San Francisco. His was one of only 12 posters selected out of 2,147 at the conference. His poster then was chosen as one of three—the best of the best—to represent the MRS in Cancun, Mexico, from August 11–15 at the 22nd annual International Materials Research Congress. The other two winning posters were from Stanford and Drexel universities.

Titled “Solution-Based Nanoengineering of Multifunctional Coatings through Self-Assembly Techniques,” the poster reported progress in the self-assembling of nanoparticles into ordered, 3-D films with uniform optical properties. The coatings, developed for near-infrared reflectors, bypass the harsh conditions imposed by conventional processing and so achieve improved functionality and novel properties. Said Paula Mahar, the MRS program coordinator who notified Fan of both the national and international honors, “The poster sessions are a highlight of the MRS Meetings and are one of the best-attended events, so not only is the award something of distinction, it’s also a very public honor.”



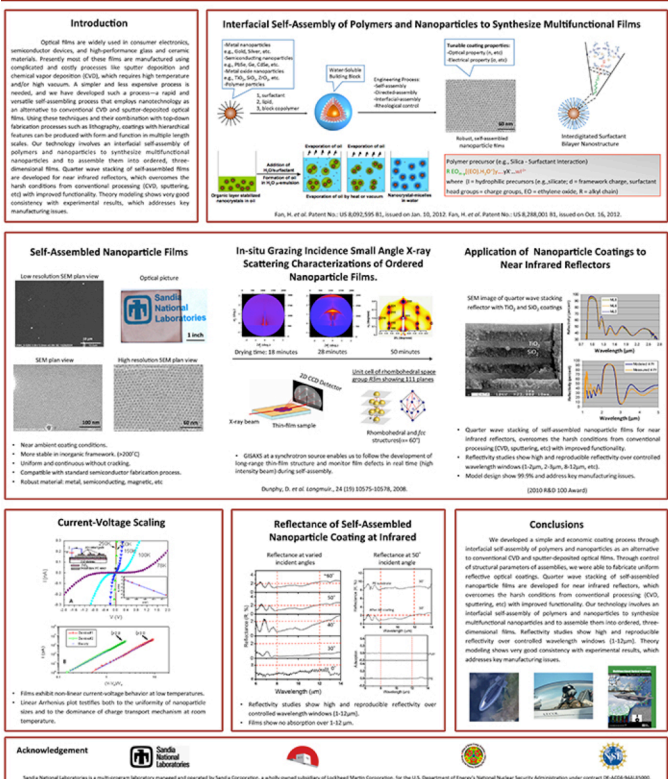
This project team won an R&D100 award for their technology in 2010.



Solution-Based Nanoengineering of Multifunctional Coatings through Self-Assembly Techniques

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We developed a simple and economic coating process through interfacial self-assembly of polymers and nanoparticles as an alternative to conventional CVD and sputter-deposited optical films. Through control of structural parameters of assemblies, we were able to fabricate uniform reflective optical coatings. Quarter wave stacking of self-assembled nanoparticle films are developed for near infrared reflectors, which overcome the harsh conditions from conventional processing (CVD, sputtering, etc.) with improved functionality. Our technology enables an interfacial self-assembly of polymers and nanoparticles to synthesize multifunctional nanoparticles and to assemble them into ordered, three-dimensional films. Reflectivity studies show high and reproducible reflectivity over controlled wavelength windows (0.5–2.0 μm). These modeling shows very good consistency with experimental results, which addresses key manufacturing issues.

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