



Singapore) discussed the design, development, and testing of polymeric materials for biodegradable cardiovascular implants. His group's goal is to replace the presently used metallic stents with a polymeric stent that self-expands at body temperature, maintains its structural integrity for three to six months, fully degrades after nine months, and releases multiple drugs at controlled rates over the lifetime of the stent. They experimented and succeeded with double-layered hollow tubes, with the interior layer made of the polymer poly-(L-lactic acid) (PLLA) and the outer layer of poly-(lactic-glycolic acid) (PLGA), both biodegradable polymers. By varying the thickness of the layers, the rate of degradation in the body could be controlled. Boey said that their polymers have the benefit of incorporating drugs into their structures, which is an improvement over metal stents that can only support drugs on their surfaces. This allows an infusion of a higher concentration of drugs into a layer, and to vary the drug type from layer to layer, if desired.

Boey reported great success with this approach in tests carried out on animals. The polymer stents self-expand in 3–10 min to open the clogged blood vessel; they degrade layer-by-layer at rates controlled by the thickness and composition of the layers; they deliver high concentrations of drugs over a long period of time; they encourage overgrowth of a protective epithelial layer; and they biodegrade inside this epithelial pocket,

so that the degradation by-products do not enter the bloodstream, where they might cause a stroke. Cross sections of removed blood vessels revealed an open artery and good blood flow in the region of the degraded stent after 60 days. Boey said that much more testing needs to be performed before these biodegradable polymer stents might be ready for use in humans.

In symposium F (Toxicology of Engineered Nanomaterials), Suresh Balasubramanian of the National University of Singapore (NUS), reported results of studies on the effects of nanoparticles of gold, with diameters of 20 nm and 7 nm, introduced into rats through inhalation and injection. Their group found that inhaled particles tend to accumulate primarily in the lungs and olfactory bulb (nasal pathway), although some were transported through the bloodstream to the aorta, spleen, and kidneys, for example. Injected particles tended to follow the bloodstream and deposit in organs across the body, although some made it back to the lungs. Surprisingly, Balasubramanian said, very few nanoparticles were found in the urine of the animals, which means that they are not passing through the animal at all. Such studies are of relevance, since there is growing concern over the toxicity of handling and use of nanoparticles to humans and the environment. It was pointed out that detailed studies of various systems of nanoparticles are urgently needed.

Other plenary talks of ICMAT 2011

were delivered by Nobel laureates Albert Fert (Unité Mixte de Physique CNRS/Thales and the Univ. Paris-Sud, France), Ada Yonath (Weizmann Institute, Israel), and Klaus von Klitzing (Max-Planck-Institut für Festkörperforschung, Germany), as well as Joachim Luther (Solar Energy Renewable Initiative of Singapore and NUS), Susumu Kitagawa (Kyoto University, Japan), Charles Lieber (Harvard University, USA), and Jean M.J. Frechet (King Abdullah University of Science and Technology, Saudi Arabia). Fert and Yonath also delivered Public Lectures at the NUS Cultural Center, which were open to the conference attendees as well as the general public, high school and junior college students. Three "Theme lectures" were given by Jonathan Adams (Thomson-Reuters, UK), Qi-Kun Xue (Tsinghua University, China), and D.D. Sarma (Indian Institute of Science, Bangalore, India).

The conference was inaugurated by the Minister for Trade and Industry, Lim Hng Kiang, Government of Singapore. Tan Chorh Chuan, President of NUS, and B.V.R. Chowdari, Organizing Chair of the ICMAT 2011 Conference, also from the NUS, welcomed the gathering on the first day of the weeklong conference. The Ambassador of France and the Indian High Commissioner also addressed the conference.

More reports can be found online at [www.mrs.org/meeting-scene/](http://www.mrs.org/meeting-scene/).

### Conference on Stress and Vibration Analysis to be held in Glasgow <http://mpsva2012.iopconfs.org>

The Modern Practice in Stress and Vibration Analysis Conference will be held in Glasgow, UK, on August 29–31, 2012. The conference will present international research in the fields of vibration analysis and stress analysis and technical areas where they intersect.

Among the confirmed speakers are J.R. Barber (University of Michigan, USA) who will present a talk on "Frictional systems under periodic loads"; W.

Lacarbonara (La Sapienza University, Rome, Italy), "Nonlinear dynamics enabled systems design and control"; F. Pierron (Arts et Métiers, Paris Tech, France), "A novel photomechanical approach to dynamic testing of materials"; W. Ostachowicz (Polish Academy of Sciences, Gdansk, Poland), "Structural health monitoring by means of elastic wave propagation"; and J. Warminski (Lublin University of Technology, Po-

land), "Nonlinear phenomena in mechanical systems dynamics."

**The abstract deadline is March 14, 2012.**

The conference is organized by the Institute of Physics Applied Mechanics Group and co-sponsored by NAFEMS. It is endorsed by the Materials Research Society.

For further information, visit <http://mpsva2012.iopconfs.org>. □