

Future frontiers

NTU's academic and research culture attracts some of the best minds from around the world. We meet 11 of the recent additions to our faculty, and preview their leading-edge research pursuits.

TEXT AND PHOTOS BY JEAN QINGWEN LOO

LIGHTING THE WAY

At 1.8m tall, Asst Prof Cesare Soci cuts a striking figure when he walks into any room. Equally impressive is his work on semiconductor nanowires, an integral component of nanoelectronics that represents one of the most intriguing fields in microelectronics.

Prior to joining NTU's School of Physical & Mathematical Sciences (SPMS) in July, Asst Prof Soci was a researcher at the University of California, San Diego, where he made an important finding about nanowires being excellent photodetectors due to their geometry (which leads to extreme sensitivity to light). He believes that understanding this particular mechanism can lead to further developments in applications such as image sensors for medical or biomedical applications.

By making use of materials widely employed by the semiconductor industry, Asst Prof Soci and his team are now focusing on new properties or functions that emerge when the dimensions involved become extremely small.

"I am very interested in exploring the feasibility of nanoelectronics and pushing their development to a practical level," he says. "Though it is hard to project if basic research will lead to new applications, we are committed to directing our efforts into areas where they may have the most benefit."

At the moment, nanowires are intensively researched for light-emitting devices for telecommunications or solid-state lighting. But applications with the potential for an even wider impact are emerging rapidly; these include sensors for the detection of specific biological species and photovoltaic



cells for solar energy harvesting. Asst Prof Soci believes that receiving the Nanyang Assistant Professorship from NTU has been a privilege, allowing him to carry on his investigations at SPMS in the company of an energetic academic community and student body. He is now working to establish

a viable research programme founded on the engineering of nanostructured materials.

"I was really impressed when I got to know Singapore and the effort that is being devoted here to education and research," he explains. "It makes me feel that my contributions can help to make a difference."