Surfactant Capsules Propel Interfacial Oil Droplets: An Environmental Cleanup Strategy

Invited for this month’s cover is the group of Prof. Martin Pumera from Nanyang Technological University, Singapore. The cover picture shows pristine underwater coral. This image symbolizes the beauty of a clean environment (coral reef in Indonesia), while the inset outlines the mechanism of the motion of the self-propelled cleaning capsule. Read the full text of the article at 10.1002/cplu.201300011

How would you describe your research?

Our group is interested in finding out how things work and why they work the way they do. We do not confine ourselves to one specific area, we have rather diverse interests; starting with electrochemistry of nanomaterials, nanoparticles, biosensing, nanotoxicity, as well as nano- and microrobots/micromotors (other interests include anthropology and astronomy, but we don’t make a living out of these!). We are mostly focused on finding out the fundamental reasons that underlay the function of systems and their limitations—and interesting applications are usually just around the corner.

Is your current research mainly curiosity driven (fundamental) or rather applied?

Our research is typically curiosity driven. For example, we investigated the real reasons behind excellent electrocatalytic activity of graphene, finding out that metallic impurities presented in graphene are responsible for this effect. This is extremely important when people want to apply these materials to real systems such as in applied devices.

We like to do fundamental research with important implications for applied research. However, those best suited to carrying out purely applied research are companies in the private sector because they know exactly what can and cannot be successful in the marketplace. If an applied project is of importance, a company can pursue it way better and faster than those in academia.

What do you consider the exciting developments in the field?

Well, the field of macro/micro/nanomotors on which this paper is based, moves so rapidly that there is an exciting development reported every month. We eagerly look forward to contributing much more to this field.

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