

Materials science and manufacturing

CSIR shares benefit of SA-Hungary agreement

Professors Viktória Vargha and Krisztina László from the Budapest University of Technology and Economics (BME), Department of Physical Chemistry and Material Science, Hungary, recently shared their research on polymer science at a seminar that was hosted by CSIR Materials Science and Manufacturing. The seminar was attended by 20 researchers working in the field of materials science. Vargha's lectures included: 'Glass-fiber reinforced composites, based on unsaturated polyester resin' and 'Mesomorphous transitions of 4-alkyloxybenzoic acids'. László's presentation was titled 'Studies on stimuli responsive Poly(N-Isopropylacrylamide) gels'.



From left Ramona Bende, Professor Krisztina László and Professor Viktória Vargha, all from the BME

Vargha and László are visiting the CSIR's polymers and bioceramics area for collaborative research and interaction with CSIR polymer scientists. Their visit forms part of the Hungarian-South African Intergovernmental S&T Cooperation Programme that was awarded by the National Research Foundation for 2007 and 2008. According to CSIR researcher Avashnee Chetty, who visited the Hungarian institution for one month last year, the CSIR's collaboration with the Hungarian researchers has been beneficial to both institutions and has been instrumental in skills transfer in the fields of smart hydrogels, polymerisation and surface science. She adds that plans are underway to extend the existing collaboration to a larger European Framework programme in the field of stimuli responsive materials for biological applications.

Vargha is a senior polymer scientist at the Laboratory of Plastics and Rubber Technology at BME. Her main field of research is the synthesis and characterisation of speciality polymers, cross-linked polymers and chemical recycling of plastics waste. According to Vargha, liquid crystals are intensively researched since they have a vast number of applications including liquid crystal displays, attenuators, sensors and numerous biomedical applications. She adds that polymeric composite materials is of paramount importance with potential applications in aerospace, the building industry and packaging. Vargha is reviewer of a number of material science journals including *Biomacromolecules*, *European Polymer Science*, *Express Polymer Letters*, and the *Journal of Thermal Analysis and Calorimetry*.

László is head of the surface chemistry group. She has been primarily active in surface science, mainly studying the interactions in solid/fluid interfaces. László's primary interest is in porous systems, especially the synthesis and surface modification of nanoporous carbon surfaces for environmental and biomedical application. According to László, stimuli responsive soft materials have become the focus of intense research activity as they display a volume phase transition (VPT), under an appropriate stimulus. She adds that these smart gels have widespread application in the biomedical field including controlled drug delivery, cell culturing

and tissue engineering, as well as in separation and purification. She has published 90 papers in peer-reviewed international journals, five book-chapters, four patents and delivered ca 100 presentations at international scientific meetings.

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