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Tailor-made nanomaterials for human benefit

Tailor-made nanomaterials designed for human benefit are going to be presented and discussed, such as, antiseptic fabrics loaded with nanosilver particles; hesperidin or nano-hesperidin loaded nanoparticles or formulations for anti-cancer and anti-aging therapies; and inert magnetic nanoparticles for sucrose removal. Many efforts to develop powerful antimicrobial agents or formulations that could be used in clinical treatments against pathogenic and resistant microorganisms have been made still, resistant pathogens are frequently present in hospital areas, complicating the treatment and cure of infections caused by them. In this respect, nanosilver particles show very interesting antimicrobial properties and have been applied in a wide range of products such as those for preventing hospital infections. These particles can be produced by chemical or biological methods. Our research is partly focused on bio-based synthesis of silver nanoparticles, their thorough characterization and application, for example, in cotton fibers impregnation that might be used in medical environment and clothing as to avoid microbial spreading. Nature keeps surprising us with incredible and simple solutions to many health problems. For example, hesperidin is an abundant citrus fruit flavanone that has many interesting properties regarding biological activity. These include anticancer pro-drug effects against different cancer-cell lines and powerful antioxidant effects. Chemo protective roles in carcinogenesis

and antioxidant activities of different formulations of hesperidin in some designed drug delivery systems are going to be presented. Finally, I shall finish this keynote lecture with tailored-made nanomagnets designed to benefit population that suffers from diabetes. As a chronic metabolic disease that leads to high glucose levels in the blood, diabetes has grave consequences to human health. Our research idea was to obtain a tailor-made nanomagnet, iron oxide-based, covered with an inert shell and enzyme-linked, as to capture and remove sucrose from a solution. These specially designed nanomagnets are stable, inert, easy to deal with, and reduce the time and cost of the process for obtaining low-sugar beverages.

Speaker Biography

Ljubica Tasic has obtained her Bachelor's and Master's in Chemistry from the Faculty of Chemistry, Belgrade University (Belgrade, Serbia). After a four-year experience as an Assistant Professor in the Applied Chemistry Department (Faculty of Chemistry, Belgrade), she continued her graduated studies at the Chemistry Institute of the University of Campinas (Unicamp, Campinas, Brazil), where she has obtained Ph.D in May 02. Post-doctorate research, from August to May 04, she has carried out at the National Synchrotron Light Laboratory (Brazil). Since October 04, as Professor at the Organic Chemistry Department of the Chemistry Institute (Unicamp, Brazil), she lectures courses on General, Organic Chemistry and Biochemistry. Her research projects are related to Biological Chemistry, Biochemistry, Nanochemistry and Metabolomics. Currently she is an Associate Professor and Head of the Organic Chemistry Department (Unicamp, Brazil).

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