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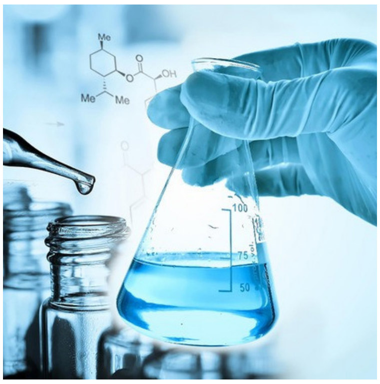
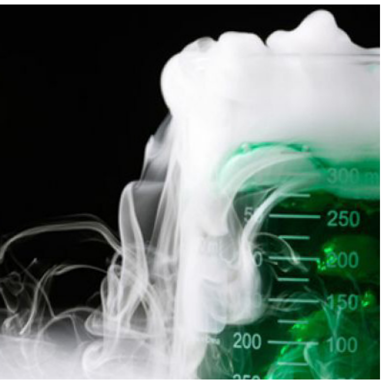
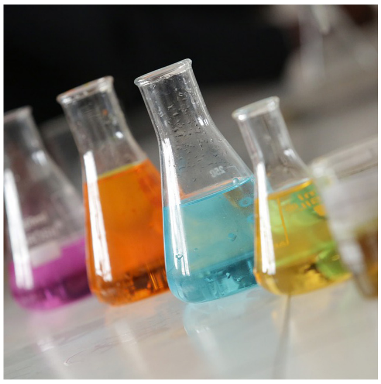
Keynote Forum
October 22, 2018

Chemistry & Biomedicine 2018







Joint Event

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Chemistry and Organic Chemistry

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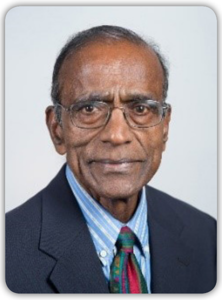
International Conference on

Biomedicine & Pharmacotherapy

October 22-23, 2018 | Frankfurt, Germany

Desineni Subbaram Naidu, Chemistry and Biomedicine 2018, Volume 8
DOI: 10.4066/2249-622X-C4-010



Desineni Subbaram Naidu

University of Minnesota Duluth, USA

Fusion of hard and soft control strategies for a smart prosthetic/ robotic hand

There are now over 20 million people in the world with missing limbs resulting from combat and non-combat operations and by 2050 there will be 50 million amputees all over the world. The availability of artificial limbs will help these people to lead a better normal life. The overall goal of the research on Prosthetic Hand Technology is to develop a smart prosthetic hand using intelligent strategies for electromyographic (EMG) signal extraction, analysis, identification, kinematic synthesis, and embedded hierarchical real-time systems and control by fusion of soft computing and hard computing techniques. The fusion of soft and hard control synergetic strategy alleviates the present problems associated with prosthetic devices. The presentation is based on Professor Naidu's recent 3-D Printed Prosthetic Hand for the World and his new research book published in October 2017 by the IEEE Press - Wiley (Series on Systems Science and Engineering) titled, "Fusion of Hard and Soft Control Strategies for a Robotic Hand".

Speaker Biography

Desineni Subbaram Naidu received MTech & PhD in Electrical Engineering, from Indian Institute of Technology Kharagpur (IITK), INDIA. He taught, visited and/or conducted research at IIT; National Research Council (NRC) Senior Research Associate at Guidance and Control Division at NASA Langley Research Center, Hampton, VA, USA (1985-90); Old Domain University, Norfolk, VA, USA (1987-90); as Professor, Associate Dean and Director, School of Engineering at Idaho State University and Measurement and Control Engineering Research Center, Pocatello, Idaho, USA (1990-2014). Since August 2014, he has been with University of Minnesota Duluth as Minnesota Power Jack Rowe Endowed Chair and Professor of Electrical Engineering. Professor received twice the Senior National Research Council (NRC) Associateship award from the US National Academy of Sciences (NAS), and is an elected (1995) (now Life) Fellow of the Institute of Electrical and Electronic Engineers (IEEE) and an elected (2003) Fellow of the World Innovation Foundation, UK. His teaching and research interests are Electrical Engineering; Control Systems; Optimal Control: Theory and Applications; Biomedical Sciences and Engineering (Prosthetics and Infectious Diseases); Large Scale Systems and Singular Perturbations and Time Scales (SPaTS): Control Theory and Applications; Guidance and Control of Aerospace Systems: Aeroassisted Orbital Transfer for Mars mission and Uninhabited Aerial Vehicles (UAVs); Advanced Control Strategies for Heating, Ventilation, & Air-Conditioning (HVAC); Modeling, Sensing and Control of Gas Metal Arc Welding (GMAW) and has over 200 journal and conference publications including 9 books.

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Notes:

Mayyada El-Sayed, Chemistry and Biomedicine 2018, Volume 8
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Mayyada El-Sayed

American University of Cairo, Egypt

Sorption and chromatography processes in environmental and biochemical applications

Sorption and chromatography processes have been widely used in a plethora of applications covering various aspects of our daily life. We highlight some of these applications through presenting some relevant work that has been undertaken by our group in three major areas, namely water treatment, bioseparation and biomedical engineering. For water treatment purposes, the removal of heavy metals, hardness ions and dyes using low-cost adsorbents, biosorbents and chelating agents is presented. Furthermore, the application of sorption and chromatographic processes in bioseparations is demonstrated by means of practical examples on the recovery of valuable proteins from whey mixtures, as well as separation of bioactive polysaccharides from algal extracts. Finally, the role of sorption equilibrium and kinetic studies in evaluating the activity and efficiency of biomaterials and biosensors is addressed. Examples are provided on assessing the activity of biomaterials for bone regeneration via studying sorption kinetics of Ca and P ions onto their surface, as well as evaluating the efficiency of glucose-binding proteins as biosensors for diabetes through investigating the binding of glucose onto these proteins via sorption mechanisms.

Speaker Biography

Mayyada El-Sayed obtained her PhD in Chemical Engineering and Biotechnology at Cambridge University, UK. She worked as a visiting research faculty member at the University of Maryland Baltimore County (UMBC). She is currently an Associate Professor and Graduate Program Director at the Chemistry Department, American University in Cairo. She has been awarded the Fulbright Scholar Fellowship along with other professional awards. She is also a member of a number of professional associations including ACS, AIChE and IChemE.

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Jaleel K Ahmed, Chemistry and Biomedicine 2018, Volume 8
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Jaleel K Ahmed

Babylon University, Iraq

Water and wax for low energy and non-polluted iron and steel industry

Oil rich countries now using natural gas as a source for reducing gas production (H_2=75% and C0=14%) for the production of direct reduced iron (DRI) from iron oxide ore. In this research a new source created which is pure hydrogen > 99% obtained from electrolysis of water. The size of hydrogen atom is much smaller than that of carbon monoxide molecule, thus hydrogen could penetrate much deeper into the crystal structure of the iron oxide resulting in greater degree of metallization for the same time of reduction. After reduction, hydrogen returns back to water, thus no material consumed with hydrogen (closed circuit process). Since huge quantity of hydrogen is needed to reduce the iron oxide (e.g. to produce one million tons/year DRI), so prolonged electrolysis of alkaline aqueous solution is required; this will be accompanied by large quantity of oxygen gas liberated at the anode electrode (430000 tons/year) which is useful for industry and health purposes, as well as production of about 108 tons/year heavy water residue uses in nuclear Industry. The world production of DRI is 75 million tons/year and continuously increases. In the present DRI is comparatively new cargo that has already presented problems when shipped in bulk with its sponge - like structure is chemically reactive and easily oxidized with liberation of heat and hydrogen. The author has developed an efficient process for the treatment of DRI known as Waxing Process makes the DRI resistant to both oxidation, corrosion, ignition and stop iron dust formation.

Speaker Biography

Jaleel K Ahmed has expertise in evaluation in Iron and steel industry. He registered 3 patents in USA, UK and Iraq about using water in iron industry an wax for storage and transportation DRI, and using wax for carburizing of steel. Also he used chlorophyll as gamma ray absorber to protect Iraqi children from cancer. He also used the mechanically red beet juice as scavenger for poisonous heavy metal ions and anticancer and detoxification of urea and uric acid from human body via urine system.

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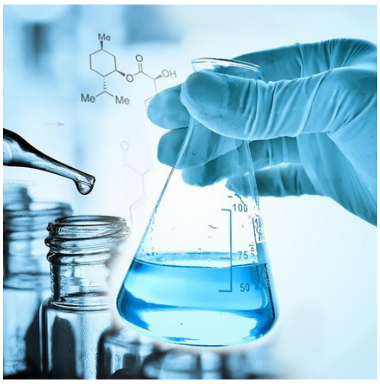

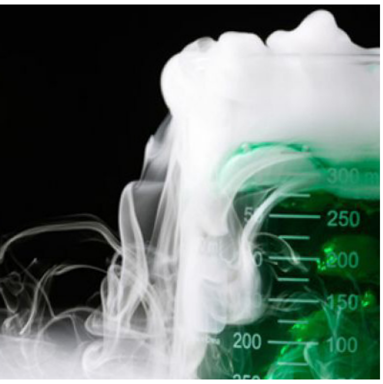

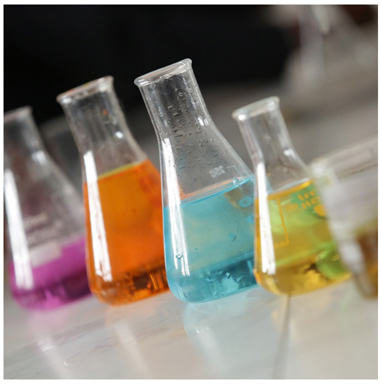

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Dirk J Broer, Chemistry and Biomedicine 2018, Volume 8
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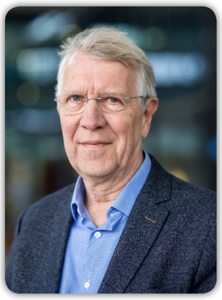

Dirk J Broer

Eindhoven University of Technology, The Netherlands

Liquid crystal polymer networks: A versatile material for advanced optics and mechanics

The molecular liquid crystal order locked in a polymer network by photopolymerization brought a new dimension to liquid crystal technology. Initially developed as low shrinkage, low thermal stress coatings, RM's soon demonstrated their function for optical applications. The large, temperature-stable and adjustable birefringence proved to be ultimately useful for the display industry which adopted the RM's for many purposes, varying from viewing angle enhancement to optical-retarder based 3D imaging optics. Presently, advanced optical applications for augmented reality and astronomy lenses are drawing much attention as well their use to stabilize special liquid crystal effects for smart windows and dedicated display types.

The use of RM's for non-display applications is studied by many academic and industrial institutes. Typically, they are polymers that change shape, surface structure or porosity. At Eindhoven University, we developed self-sustaining oscillators and micro-transport devices responding to triggers as heat, light and/or electrical fields. Films may deform from a flat to a complex, but pre-designed, shape with prospects to light-triggered origami and self-folding plastic elements. A completely new development relates to coatings that switch their surfaces from basically flat to corrugated with a controlled topography, thus controlling properties as friction and grip. And coatings are developed that can dynamically absorb or secret liquids. The lecture will discuss our newest developments, giving a preliminary view on the future of RM's with advanced applications in the fields of smart coatings, soft robotics and haptics.

Speaker Biography

Dirk J Broer is specialized in polymer science and liquid crystal technology. He joined Philips (Eindhoven, Netherlands) in 1973 developing materials for data storage, telecommunication and display optics. In 2003 he was appointed as vice president Philips Research and from 2010 fulltime professor at Eindhoven University of Technology coordinating a program on responsive soft materials. He is member of the Royal Netherlands Academy of Arts and Sciences. In total, he has 275 publications in peer reviewed journals and more than 120 US patents.

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Angelo Nacci, Chemistry and Biomedicine 2018, Volume 8
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Angelo Nacci

University of Bari, Italy

Nanostructured catalysts for green synthesis

Nanoscale materials are assuming a key role in green catalysis with a wide number of applications ranging from fuel conversion, pollution abatement to fine chemicals production. Many researchers are exploiting the high activity and selectivity of nanocatalysts to develop greener and waste-minimized processes. During the last decades, we exploited nanostructured catalysts based on several metals like Pd, Cu, Au, Zn, and Ti to perform a wide range of organometallic reactions such as Heck, Suzuki, Ullmann, Stille, carbonylations, cyclopropanations, C-H activations, CO_2 photoreduction etc. Environmentally friendly conditions were chosen to perform these processes given by the absence of phosphane ligands and the use of neoteric solvents (ionic liquids, water, emulsioned mixtures and so on) as reaction media. This lecture deals with our recent advances in controlling the catalyst performances by choosing properly the nature of both the reaction medium and the nanocatalyst.

Speaker Biography

Angelo Nacci completed his PhD in Chemical Sciences in 1994 at Bari University (Italy). Next, he became researcher of Organic Chemistry at Chemistry Department of Bari University. In 2001 was visiting researcher at TUM University of Munich (Germany) and in 2005 became associate Professor of Organic Chemistry. He is currently the President of Chemistry Courses Degree at Bari University. Research interests are focused on: i) organometallic chemistry in ionic liquids; ii) green nanocatalysis; iii) CO_2 capture and valorization and iv) synthesis and recycling of bioplastics. He is co-author of almost 80 publications on major journals, more than 60 Communications to Congress and 1 patent.

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Nuno Manuel Xavier

Universidade de Lisboa, Portugal

Synthesis and therapeutic potential of innovative nucleoside and nucleotide analogs

The development of nucleoside and nucleotide analogs or mimetics is a relevant approach in medicinal chemistry, aiming at accessing molecules that may interfere with biological processes in which natural nucleos(t)ides act and are over-activated in diseases such as cancer or viral infections. Among these events are nucleic acid replication, the inhibition or the blocking of which conduces to anticancer or to antiviral effects. In this context, some synthetic nucleos(t)ides have reached clinical application. Acquisition of resistance of cancer cells and some virus towards nucleos(t)ides analogs is a major limitation of their use as drugs. The ability of these types of molecules to show antimicrobial effects and to inhibit cholinesterases has also been described. Therefore, the development of novel nucleos(t)ide-based structures that may exhibit new mechanisms of action as well as the exploitation on rather less studied potential therapeutic uses for these types of compounds is highly encouraging. In this context, in this communication the synthesis and the biological evaluation of novel nucleosides constructed on 5/6-azido glycosyl units and on D-glucuronamide templates, 5'/6'-isonucleosides and nucleotide analogs comprising potential neutral and relatively stable bioisostere moieties for a phosphate system, namely phosphoramidate, sulfonamide or phosphonate groups, is presented. The synthetic strategies for their access included N-glycosylation, sugar azidation, azide-alkyne 1,3-dipolar cycloaddition, Mitsunobu coupling, Arbuzov or Staudinger-type reactions as key steps. Some molecules revealed potent antiproliferative effects in cancer cells or showed their ability to inhibit cholinesterases. Their GI50 or Ki values were similar or close to those of standard drugs, turning them promising lead molecules for cancer or for Alzheimer's disease. Preliminary assays also indicated the potential interest of some nucleosides as anti-flavivirus agents, due to their propensity to inhibit or to destabilize an essential ATP-dependent non-structural enzyme for Zika-virus replication.

Speaker Biography

Nuno M Xavier (b. Nov. 1982, Vila Real, Portugal) received a dual Ph.D. degree in Organic Chemistry from the University of Lisbon and from the National Institute of Applied Sciences of Lyon in 2011, where he devised new synthetic methodologies for novel highly functionalized monosaccharide derivatives of antimicrobial potential. He worked afterwards as Postdoctoral Researcher in the University of Natural Resources and Life Sciences of Vienna in the synthesis of new potentially antibacterial heptose-based compounds. He carried out another postdoctoral research period at the Faculty of Sciences, University of Lisbon and in 2014 he became Researcher (FCT Investigator) at this Institution. His research activities, reported in more than 30 publications and frequently presented in international conferences, are within the context of organic and medicinal chemistry and focus on the development of new bioactive carbohydrate derivatives and nucleos(t)ide analogs as inhibitors of relevant therapeutic targets or disease-associated biological events.

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