

Amolakchand Mahavidyalaya, Yavatmal in Association with Royal Society of Chemistry (RSC) West India Section and Indira Gandhi National Open University, Nagpur Regional Centre

Presents a webinar on

LATEST DEVELOPMENTS IN GREEN CHEMISTRY

Friday 24th July 2020

10 am: Introduction

10:15 am: *CHEMISTRY FOR SUSTAINABLE DEVELOPMENT*
Prof. S. Chandrasekaran (Dept. of Chemistry IISc Bangalore)



11:00 am: *GREEN CHEMISTRY IN CARBOHYDRATE SYNTHESIS*
Prof. Suvarn Kulkarni (Dept. of Chemistry IIT Bombay)



11:45 am: *BIO-INSPIRED CATALYSIS FOR A SUSTAINABLE FUTURE*
Prof. Sayam Sen Gupta (Dept. of Chemistry IISER Kolkata)



Abstracts for Talks

Prof. Chandrasekaran's Talk:

Chemistry is both a central science and an enabling science. Chemistry plays a key role in conquering diseases, solving energy problems, solving environmental problems, providing the discoveries that lead to new industries, and developing new materials and new technologies. To make an impact, Chemistry needs creativity and has to address issues of sustainability and human wellbeing. The concept of sustainable development emerged in the 1980s in response to a growing realization of the need to balance economic and social progress with concern for the environment and stewardship of natural resources. 'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.' The chemistry for sustainable development is referred to as Green Chemistry. And for chemists, it is becoming increasingly important to be "green" by applying the principles of green chemistry to all facets of chemical sciences, basic and applied research, production and education. In this lecture the historical development of the concept of Green Chemistry, principles of green chemistry and application to a few practical problems with examples would be discussed.

Prof. Sayam Sen Gupta's Talk:

Over the last century, science and technology have given humanity immense and unprecedented power over the welfare of the ecosphere. Unfortunately, the exercise of our newfound powers has led to a major degradation of the ecosphere. In our increasingly crowded world, common chemicals that once seemed harmless no longer do. To build a sustainable future, chemists have to design technology that not only eliminates hazards from chemical products but also develop new chemistry for industrially important chemical transformations, safe energy and renewable feedstocks. In my lecture I will discuss the chemical goals of sustainability with special emphasis on developing new catalysts for industrially relevant organic transformations. I will focus on recent efforts from our group and other on replacing metals such as palladium and rhodium with iron which is non-toxic and abundant.

Expeditious Synthesis of Glycoconjugates

Suvarn S. Kulkarni's Talk:

Bacterial glycoconjugates are comprised of rare D and L deoxy amino sugars, which are not present on the human cell surface. This peculiar structural difference allows discrimination between the pathogen and the host cell and offers avenues for target- specific drug discovery and carbohydrate-based vaccine development. However, they cannot be isolated with sufficient purity in acceptable amounts, and therefore chemical synthesis is a crucial step toward the development of these products. We recently established short and convenient methodologies for the synthesis of orthogonally protected bacterial D and L-deoxy amino hexopyranoside and glycosamine building blocks starting from cheaply available and naturally occurring D-mannose and L-rhamnose. The one-pot protocols rely on highly regioselective nucleophilic displacements of triflates. These procedures have been applied to the synthesis of various bacterial glycoconjugates.

Similarly, trehalose is an important naturally occurring sugar. Trehalose containing glycolipids are mainly present in MTb and their synthesis is important for studying their role in MTb virulence.

In this talk I will show how simple and natural feedstock starting materials i.e. nontoxic sugars such as Mannose and Trehalose can be transformed into biologically important complex glycoconjugates via chemical synthesis keeping in mind the principles of green chemistry. I will mainly focus on use of regioselective reactions, minimal protecting groups, waste minimization, using less hazardous reagents, catalytic reactions, and one pot transformations.

Important Notes:

1. All Teachers, Academicians, Industrials and Students can participate.
 2. Registration Link: <https://forms.gle/NPr9EUDn5UKNZG7E7>
 3. Join WhatsApp Group for further updates- <https://chat.whatsapp.com/BsMv3aenZJbCJmTOLWz6ec>
 4. E- Certificate will be provided to the participants after filling feedback form .
 5. YouTube Link for webinar- <https://www.youtube.com/watch?v=TCTbeAup9Wo&feature=youtu.be>
- The link of webinar will be sent to the registered participant one day before.