

CiQUS Lecture



Prof. Syuzanna R. Harutyunyan

Organometallic and oscillating catalysis



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 Chemistry

FONDO EUROPEO DE DESENVOLVEMENTO REGIONAL
 PO FEDER Galicia 2014-202 - *Unha maneira de facer Europa*

Monday, April 24, 2023
12:15 pm CiQUS Seminar Room

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Abstract:

The research program in our group is aimed at the development of novel catalysis concepts. In this talk I will shortly present our work on the Cu-catalyzed dearomatisations and Mn-catalyzed activation of H–P bonds. The application of the latter as a tool for synthesis of enantiopure stereochemically defined Z-alkenes bearing a tertiary allylic stereocenter and a reactive functional group will also be presented.

In the final and the main part of the talk, I will discuss our recent progress in feedback-regulated catalysis using chemical reaction networks. Our group has designed a catalytically active small organic molecule oscillator. Sustained oscillations are produced for various components of the network in a flow system. The oscillating system is not just a chemical clock but carries a secondary function, such as catalysis, resulting in time controlled catalytic chemical synthesis. This general design principle opens up new pathways for coupling oscillatory kinetics to chemical reactions that require rate enhancement using principles of catalysis and allows unique type of chemoselectivities.

Biosketch:

Syuzanna is originally from Armenia, where she received her Master's degree in Pharmacology. She did her PhD in Moscow with Prof. Belokon and was a postdoctoral fellow in Groningen with Prof. Feringa. Following few years of research stay at Janssen Pharmaceutica, the University of Groningen appointed her as Assistant Professor in 2010, as Full Professor in 2018 and chair of Homogeneous Catalysis unit in 2020.

Syuzanna's research is in the field of chemical catalysis and out of equilibrium systems. Her scientific prowess has been recognized by awards such as the Solvias Ligand Contest Award, the KNCV Gold Medal from Dutch Royal Society and the Royal Chemical Society Homogeneous Catalysis Award, and by ERC Consolidator and NWO Vici grants. Furthermore, Syuzanna is an associate editor of ACS Catalysis.