

Invited Speaker 1

Nature inspired bioengineering in Health and Bioeconomy

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Abstract

Nature is a source of inspiration for science and technology, having generated several solutions that foster biotechnology and bioengineering, namely through new and personalized tools in Health, as well as new tools for Bioeconomy. We take inspiration from dynamic molecular recognition events in Nature to engineer biological and chemical tools that give rise to advanced functional materials. The first topic will address nature-inspired ligands for reversible binding to target molecules, based on the underlying principle of atom economy. While a variety of applications can be foreseen for such systems, we will focus on contributions in biomanufacturing. Rationally designed chemical combinatorial libraries support the development of robust peptidomimetics that can be easily adapted to several targets and to chromatographic and non-chromatographic matrices. The second topic will focus on the biotechnological production of biodegradable materials, and on their application, namely in the field of artificial olfaction. Together with in-house developed electronic noses and machine learning algorithms, such materials are tuned to mimic the sense of smell and used for biosensing purposes.

Keywords: biomimetics; bioseparation; biosensing

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