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Eawag Seminar Invitation

New Biotechnology Routes for the Valorisation of Organic Wastes Through the Production of Biopolymers

Speaker Prof. Maria Reis Universidade Nova de Lisboa, Portugal

^{When} May 10, 11.00 – 12.00 a.m.

Where Forum Chriesbach, room C20, Eawag Dübendorf

Abstract Large amounts of wastes generated worldwide poses several environmental problems. On the other hand, some of these wastes are potential resources of high-value chemicals and materials. A more efficient and sustainable use of resources must be envisaged aiming at simultaneously reduction and valorisation of residues.

Biopolymers can be used in a wide range of applications. The replacement of the synthetic polymers by biodegradable biopolymers is hindered by the highest market price of the latter. Polyhydroxyalkanoates (PHAs) are biodegradable biopolymers that can be synthesized by several microorganisms and internally accumulated as carbon and energy reserves. The use of agro industrial wastes as feedstocks, as well as novel process operation strategies for PHA production may contribute for the reduction of the polymer final price.

Other class of biopolymers are the polysaccharides, which have a wide spectrum of applications due to their functional properties. Nowadays, the market is still dominated by the polysaccharides obtained from plants and algae. On the other hand, extracellular polysaccharides or exopolysaccharides (EPS) can be secreted by microorganism. The microbial EPS processes are usually more productive and less resource intensive than plant and algae-derived polysaccharides.

The production of microbial biopolymers by using renewable resources and less energy intensive approaches contribute to lower the process operational costs. In this presentation, sustainable processes for PHA and EPS production at lab and pilot scale will be presented.