

Microbial Oxidoreductases and Bioprocesses for Enabling a Circular Economy

Dr. Elvira Romero, Assistant Senior Researcher, elvira.romero@imdea.org

Biotechnological Processes Unit, IMDEA Energy, Spain, <https://energia.imdea.org/>

The oxidoreductases class of enzymes catalyses the transfer of electrons from one molecule (reductant) to another (oxidant). Among them, several oxidases, monooxygenases, peroxygenases and reductases have been described with high potential in industry to replace or complement traditional chemical synthesis processes. These biocatalysts must be efficient, selective, robust, sustainable and affordable. If this is not the case, the necessary Protein Engineering tools are currently available to improve their properties.^[1] Alternatively, either microorganisms or microbial communities, natural or engineered, can be implemented in cost-effective bioprocesses to convert organic renewable resources, such as biomass and residues, into sustainable biofuels or biochemicals. In this oral communication, several fascinating examples of oxidoreductases and biotransformations of great industrial interest will be discussed highlighting their potential contributions to our transition to a circular economy.

[1] E. L. Bell, W. Finnigan, S. P. France, A. P. Green, M. A. Hayes, L. J. Hepworth, S. L. Lovelock, H. Niikura, S. Osuna, E. Romero, *Nat. Rev. Methods Prim.* **2021**, *1*, 1–21.