

# EES Catalysis

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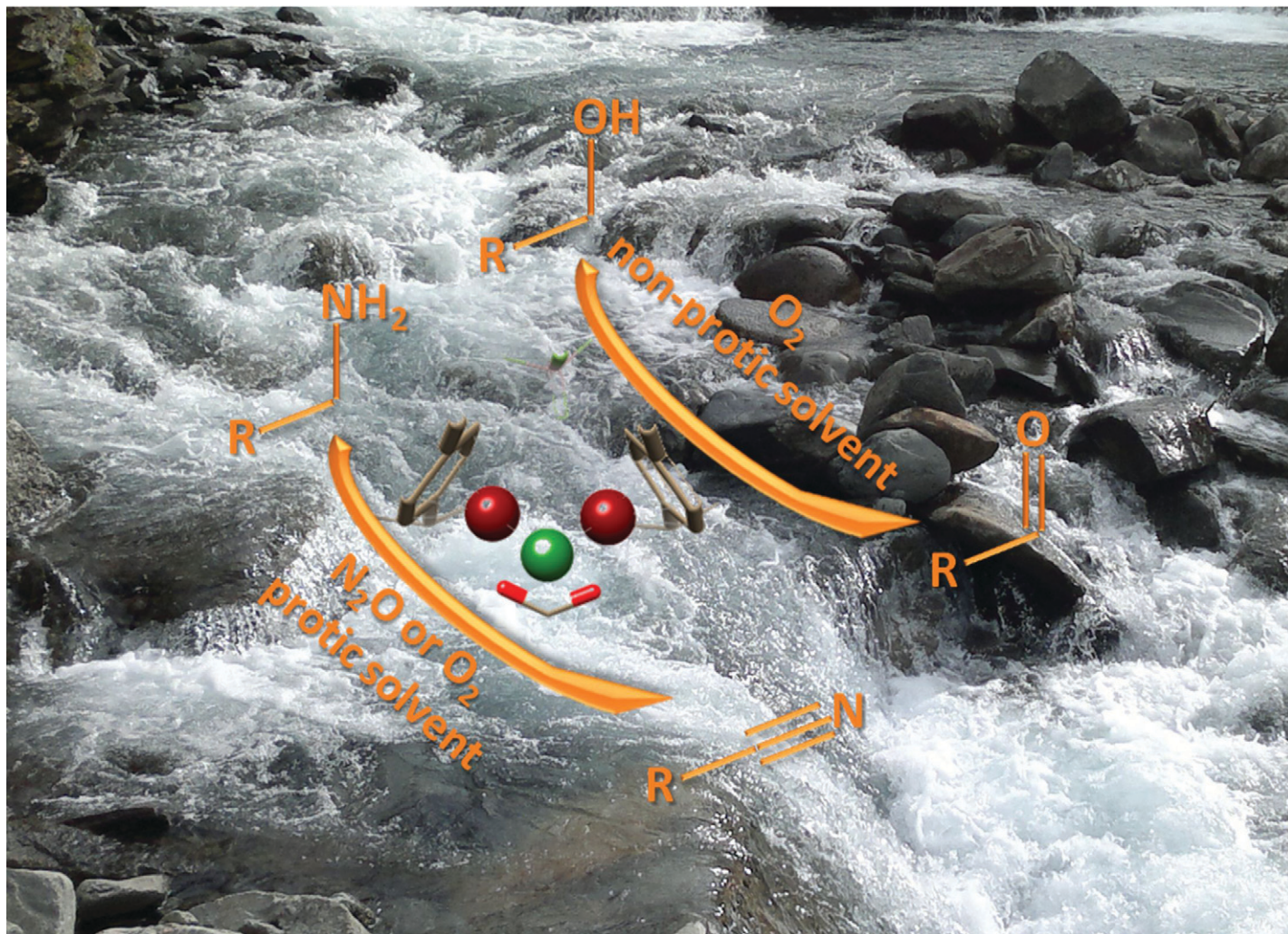
**Exceptional research on energy  
and environmental catalysis**

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**Fundamental questions  
Elemental answers**





Showcasing research from Dr. Prechtl's laboratory, Instituto Superior Técnico, University of Lisbon, Portugal.

Mild and selective transformations of amines and alcohols through bioinspired oxidation with nitrous oxide or oxygen

We report on catalytic oxidation of amine to nitrile and alcohol to aldehyde with pure oxygen or nitrous oxide, using an air- and water-stable organometallic which has been reported to act as biomimetic formaldehyde dehydrogenase and dismutase. Now we report on biomimetic nitrous oxide reductase (N2OR) for decomposition of  $N_2O$  in presence of hydrogen donors like amines. The selectivities and yields are affected by solvents, oxidants and temperature. Albeit oxygen is known as a potent oxidant, it is remarkable that the catalyst can efficiently oxidise amines and simultaneously decompose the greenhouse gas  $N_2O$ .

As featured in:



See Ana M. M. Faisca Phillips,  
Elisabete C. B. A. Alegria,  
Martin H. G. Prechtl *et al.*,  
*Catal. Sci. Technol.*, 2024, **14**, 1512.