



Emerging Pollutants: Protecting Water Quality for the Health of People and the Environment

Niobium-Based Advanced Nanomaterials for Emerging Pollutants Removal from Wastewater

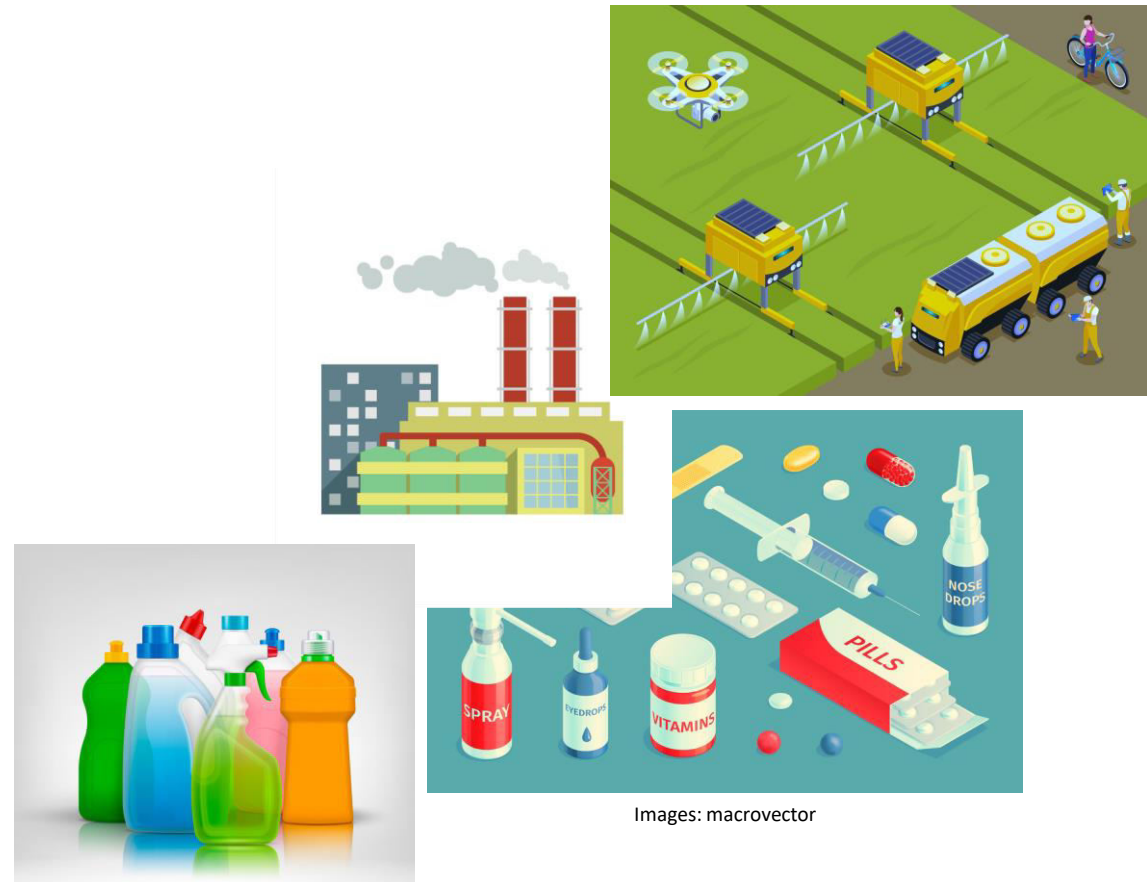
Lanna Emilli Barbosa Lucchetti

January 18th/16:45-18:00 CET



Water Contamination by Emerging Pollutants - A Multifaceted Issue

- Compounds with multiple origins and sources.
- A wide variety of chemical structures.
- New emerging pollutants are still being identified and discovered.



Images: macrovector

Water Contamination by Emerging Pollutants - A Multifaceted Issue



“Despite the progress, there are wide geographical disparities, and 2 billion people still did not use safely managed drinking water in 2020.”

Water Contamination by Emerging Pollutants - A Multifaceted Issue



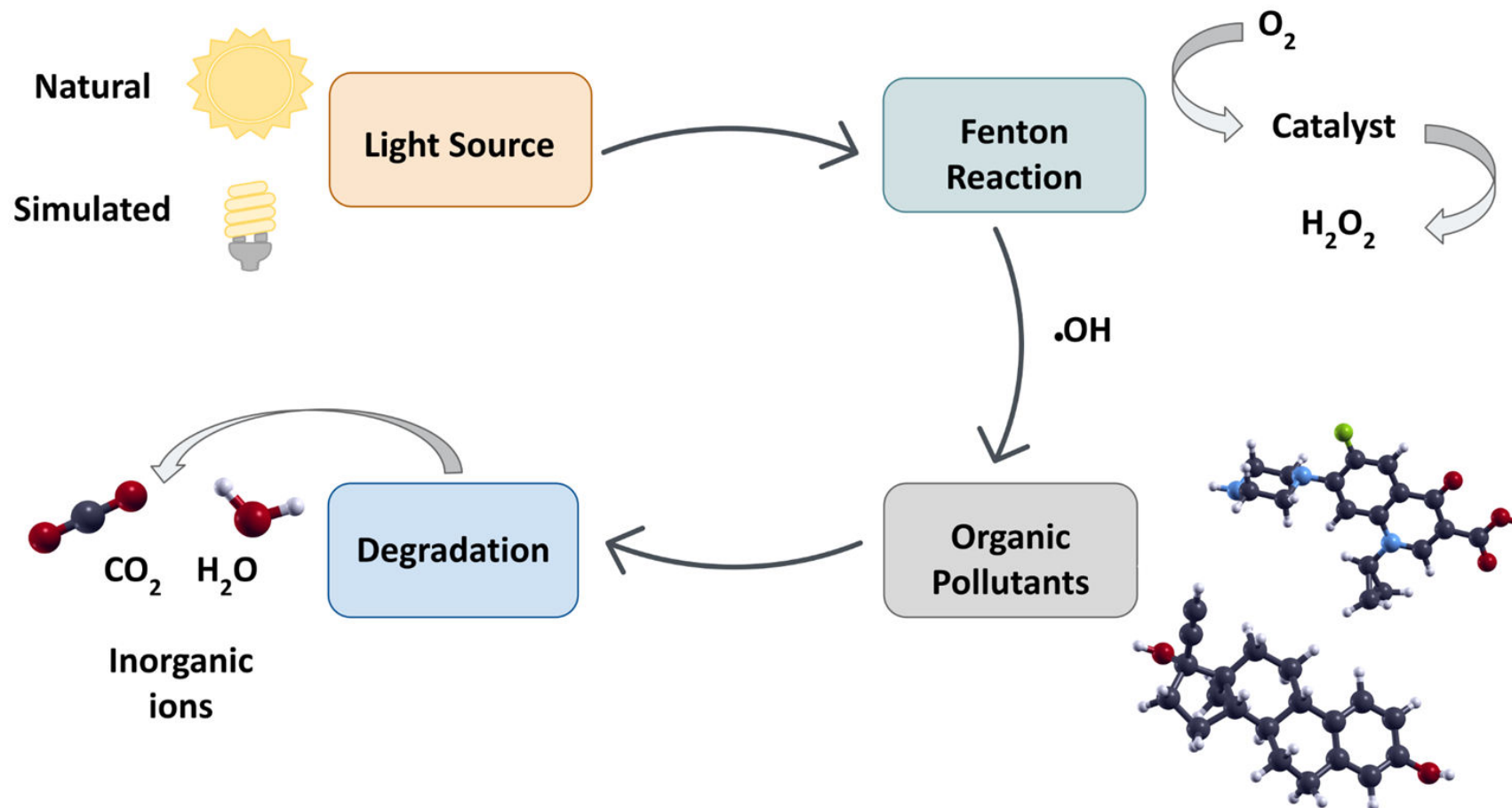
“The science is still not clear on the concentrations at which these contaminants pose a risk to human health.”

Water Contamination by Emerging Pollutants - A Multifaceted Issue

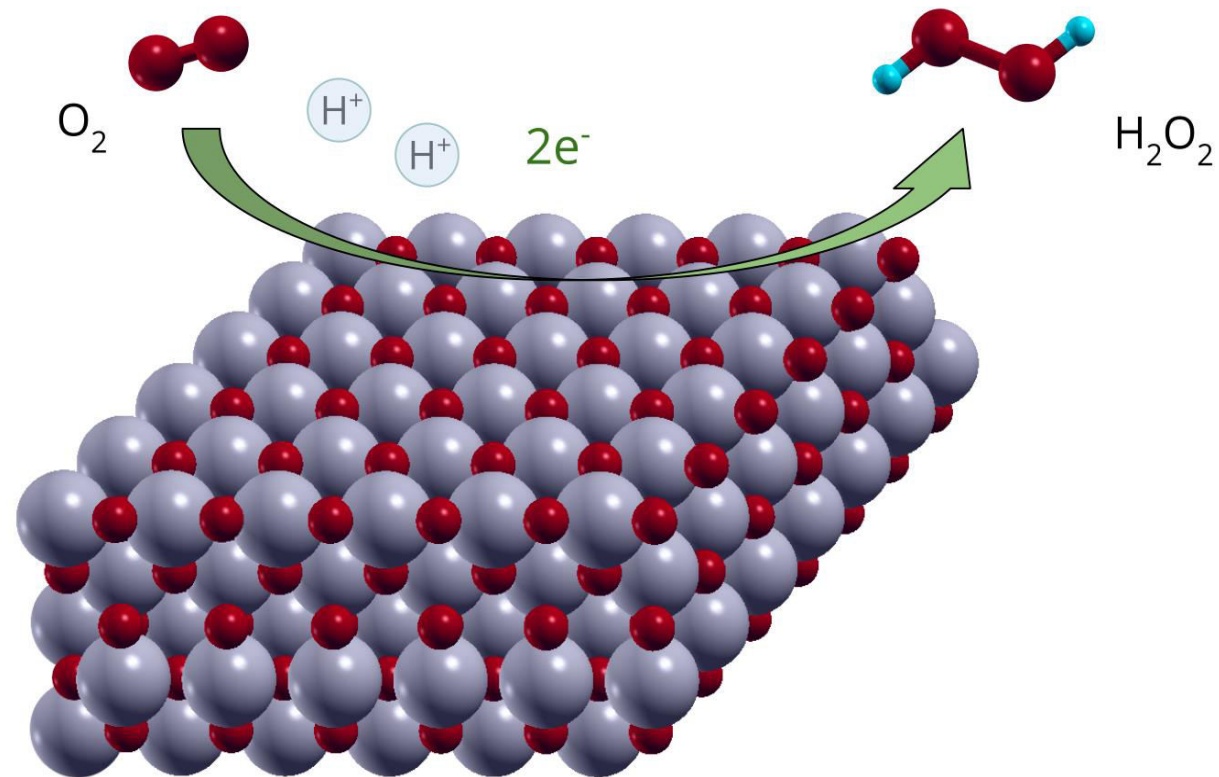


“Governments and other stakeholders should encourage and **fund research** in the water sector, **work with academic institutions**, and disseminate results to inform decision-making.”

Emerging Pollutants Degradation with Electro-Fenton Processes



The Oxygen Reduction Reaction



Advanced Nanomaterials for Emerging Pollutants Degradation



Contents lists available at [ScienceDirect](#)

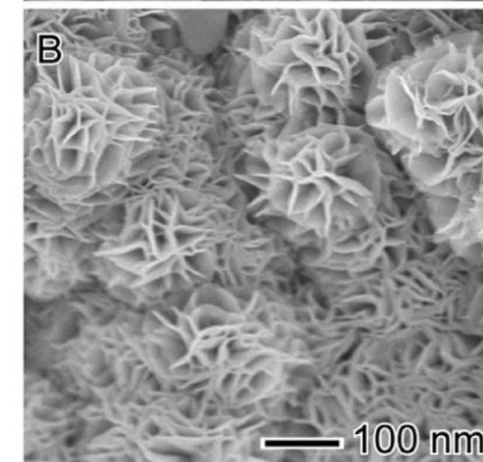
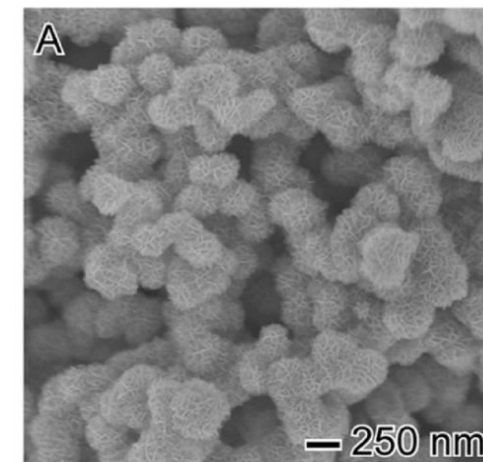
Chemosphere

journal homepage: www.elsevier.com/locate/chemosphere



Application and stability of cathodes with manganese dioxide nanoflowers supported on Vulcan by Fenton systems for the degradation of RB5 azo dye

L.R. Aveiro ^a, A.G.M. Da Silva ^b, E.G. Candido ^b, V.S. Antonin ^{a,c}, L.S. Parreira ^b, R. Papai ^a, I. Gaubeur ^a, Fernando L. Silva ^c, M.R.V. Lanza ^c, P.H.C. Camargo ^b, M.C. Santos ^{a,*}



Advanced Nanomaterials for Emerging Pollutants Degradation



Contents lists available at [ScienceDirect](#)

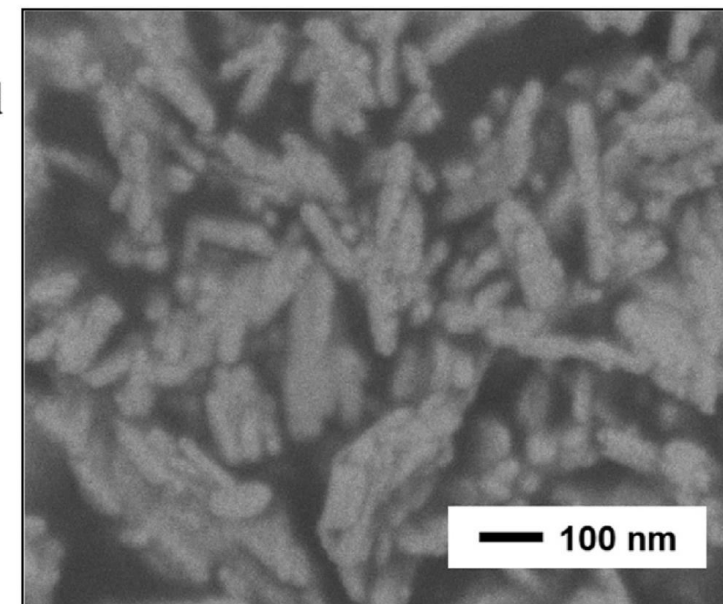
Electrochimica Acta

journal homepage: www.elsevier.com/locate/electacta

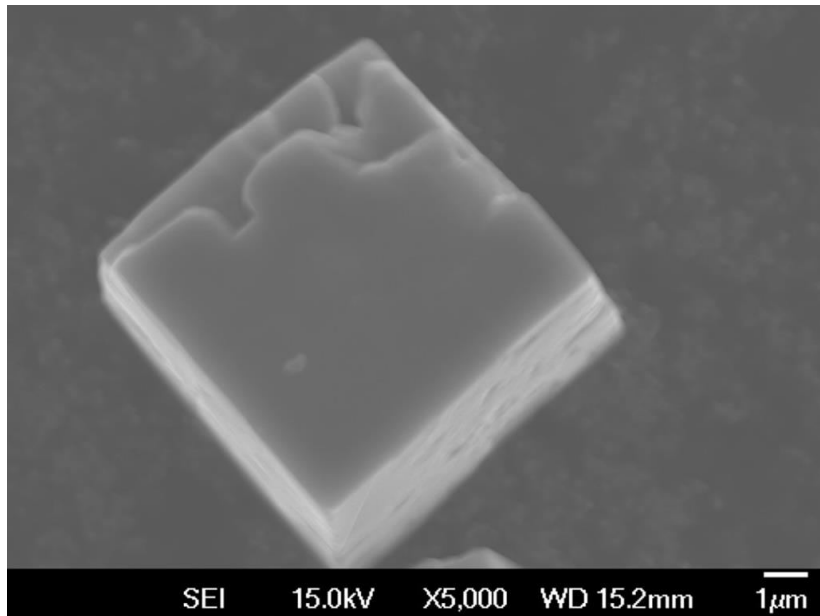


Mineralization of paracetamol using a gas diffusion electrode modified with ceria high aspect ratio nanostructures

Victor S. Pinheiro ^a, Edson C. Paz ^{a, c}, Luci R. Aveiro ^a, Luanna S. Parreira ^b,
Felipe M. Souza ^a, Pedro H.C. Camargo ^b, Mauro C. Santos ^{a, *}

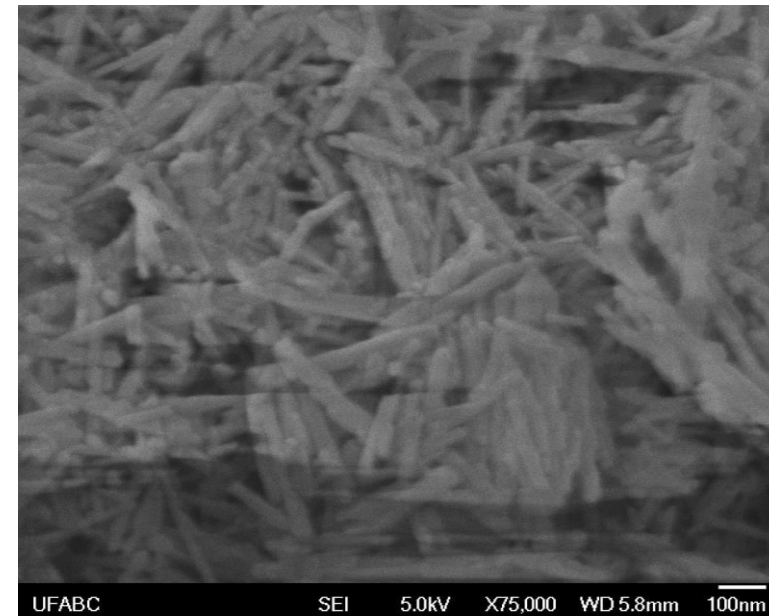


Recent Research on Metallic Oxides Functionalized Carbon-Based Materials



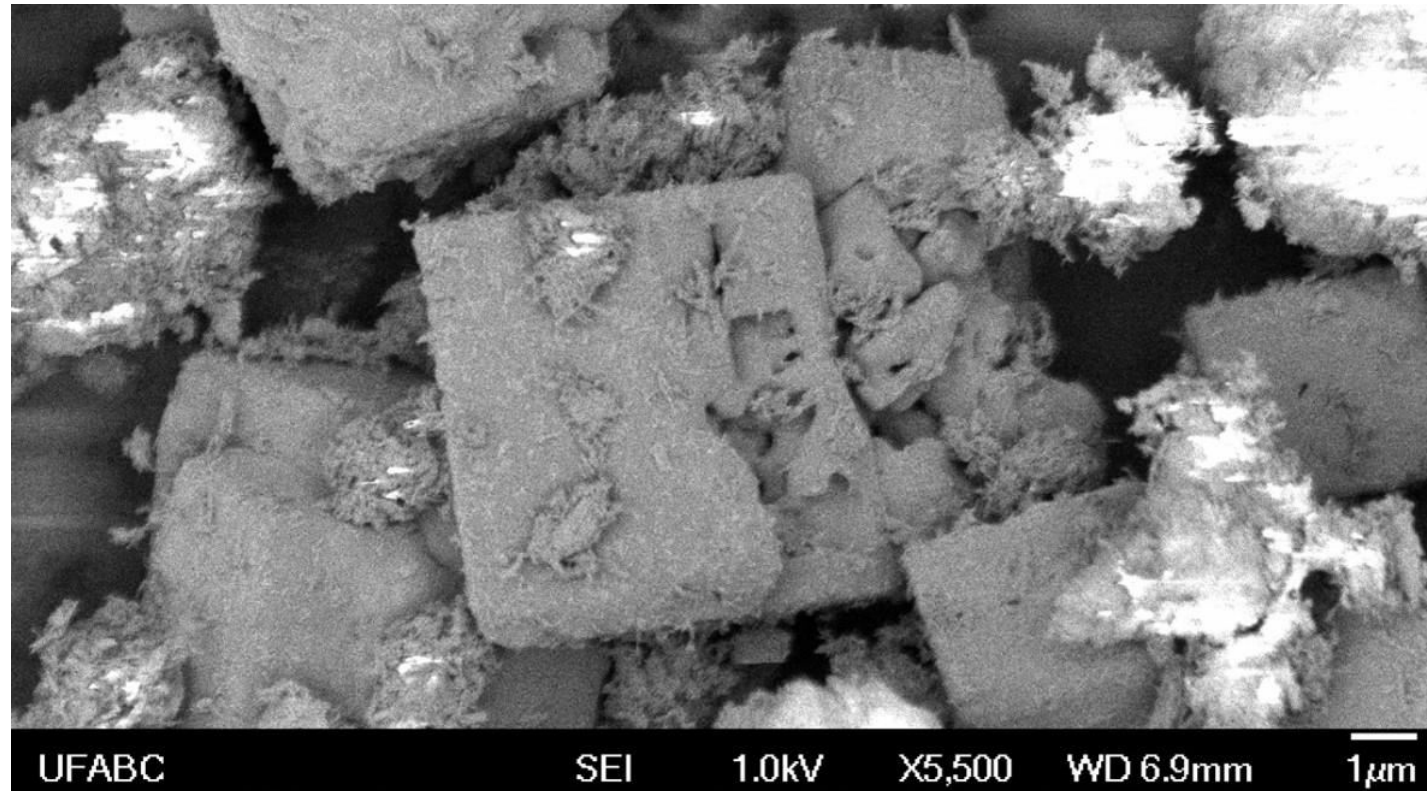
NaNbO₃ microcubes

+



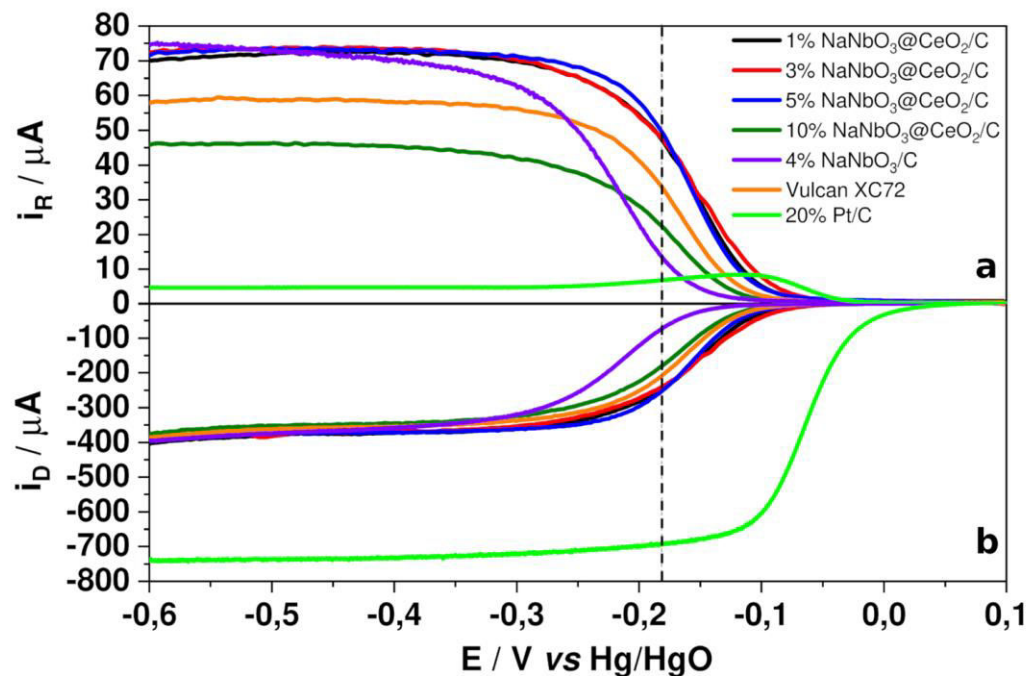
CeO₂ nanorods

Recent Research on Metallic Oxides Functionalized Carbon-Based Materials



NaNbO_3 microcubes + CeO_2 nanorods

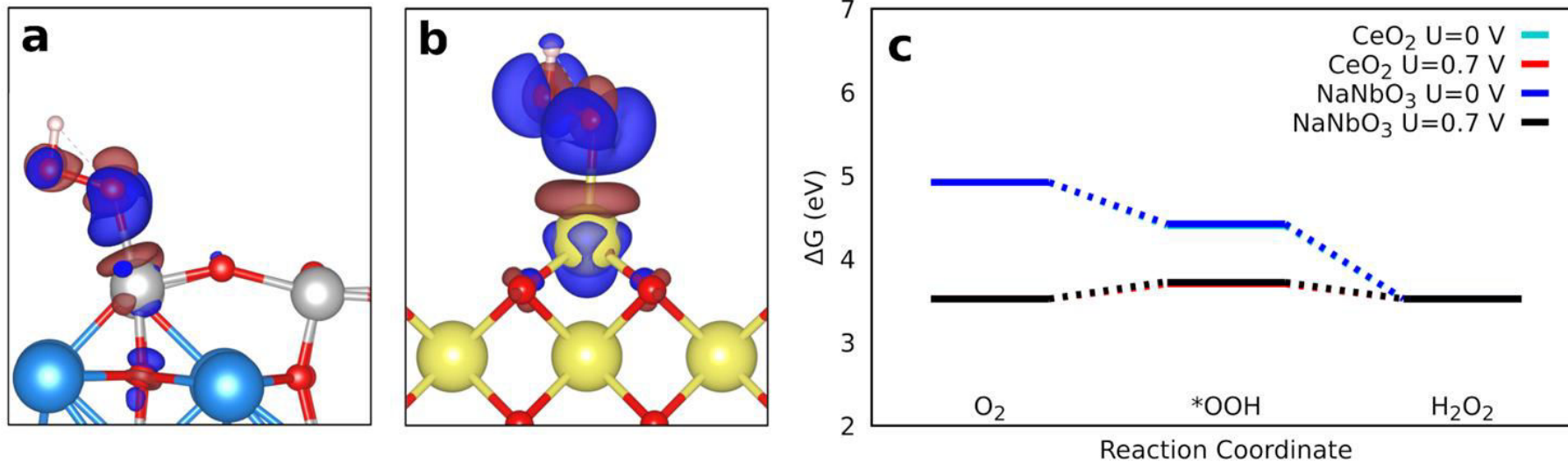
Recent Research on Metallic Oxides Functionalized Carbon-Based Materials



Percentage of electrogenerated H_2O_2 and the electron transfer for the synthesized electrocatalysts.

Sample	Number of electrons	% H_2O_2
1% $\text{NaNbO}_3@/\text{CeO}_2/\text{C}$	2.3	82
3% $\text{NaNbO}_3@/\text{CeO}_2/\text{C}$	2.3	83
5% $\text{NaNbO}_3@/\text{CeO}_2/\text{C}$	2.3	82
10% $\text{NaNbO}_3@/\text{CeO}_2/\text{C}$	2.7	63
4% NaNbO_3/C	2.3	82
Vulcan XC72	2.5	72
20% Pt/C	3.9	6

Recent Research on Metallic Oxides Functionalized Carbon-Based Materials



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