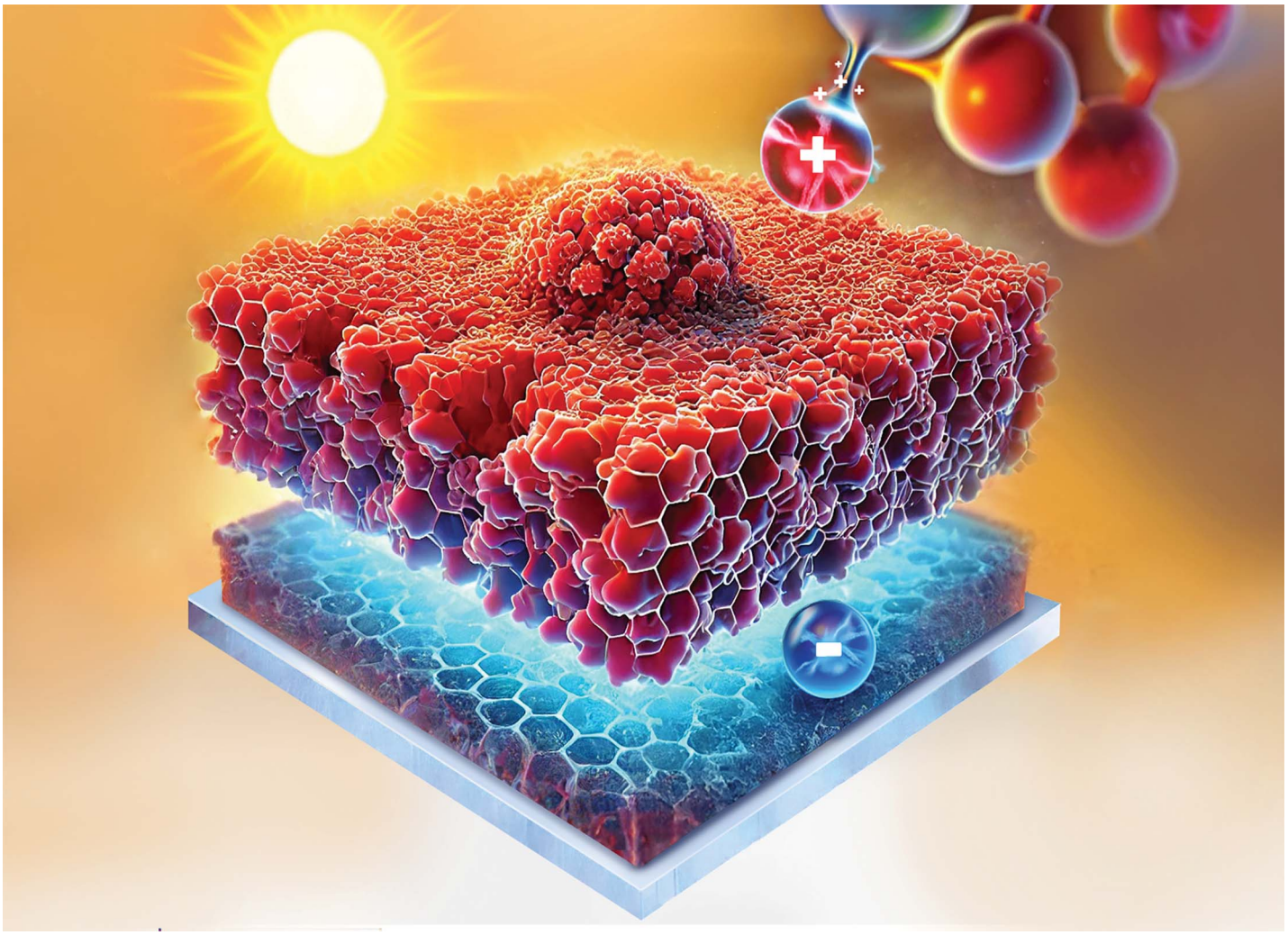


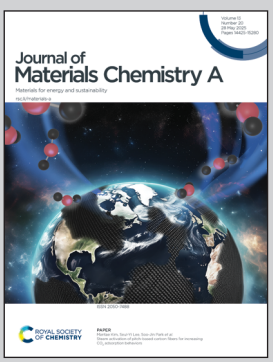
**Showcasing a study on the development of promising photoelectrodes by a group of researchers led by Professor Mendes from Laboratory for Process Engineering, Environment, Biotechnology and Energy (LEPABE), Faculty of Engineering, University of Porto, Porto, Portugal.**

Unlocking the potential of semi-transparent $Ta_3N_5$ photoelectrodes for high-performance, reproducible solar redox flow cells

This work pioneers the development of reproducible semi-transparent tantalum nitride photoelectrodes for high-performing solar redox flow cell (SRFC) applications. The electrophoretic deposition process was systematically optimized by investigating the effects of deposition time and annealing temperature under an $NH_3$ atmosphere. The incorporation of a thin, compact Ta-doped $TiO_2$ underlayer enabled an unprecedented balance between photopotential and photocurrent. Notably, bare $Ta_3N_5$ photoelectrodes – without co-catalysts or nanostructuring – achieved a photocurrent density of approximately 4.0 $mA{\cdot}cm^{-2}$ and a power density of around 1.1 $mW{\cdot}cm^{-2}$.

Image reproduced by permission of Paula Dias, Filipe Francisco and Adelio Mendes from *J. Mater. Chem. A*, 2025, **13**, 14601.

## As featured in:




See Paula Dias, Adélio Mendes *et al.*, *J. Mater. Chem. A*, 2025, **13**, 14601.

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