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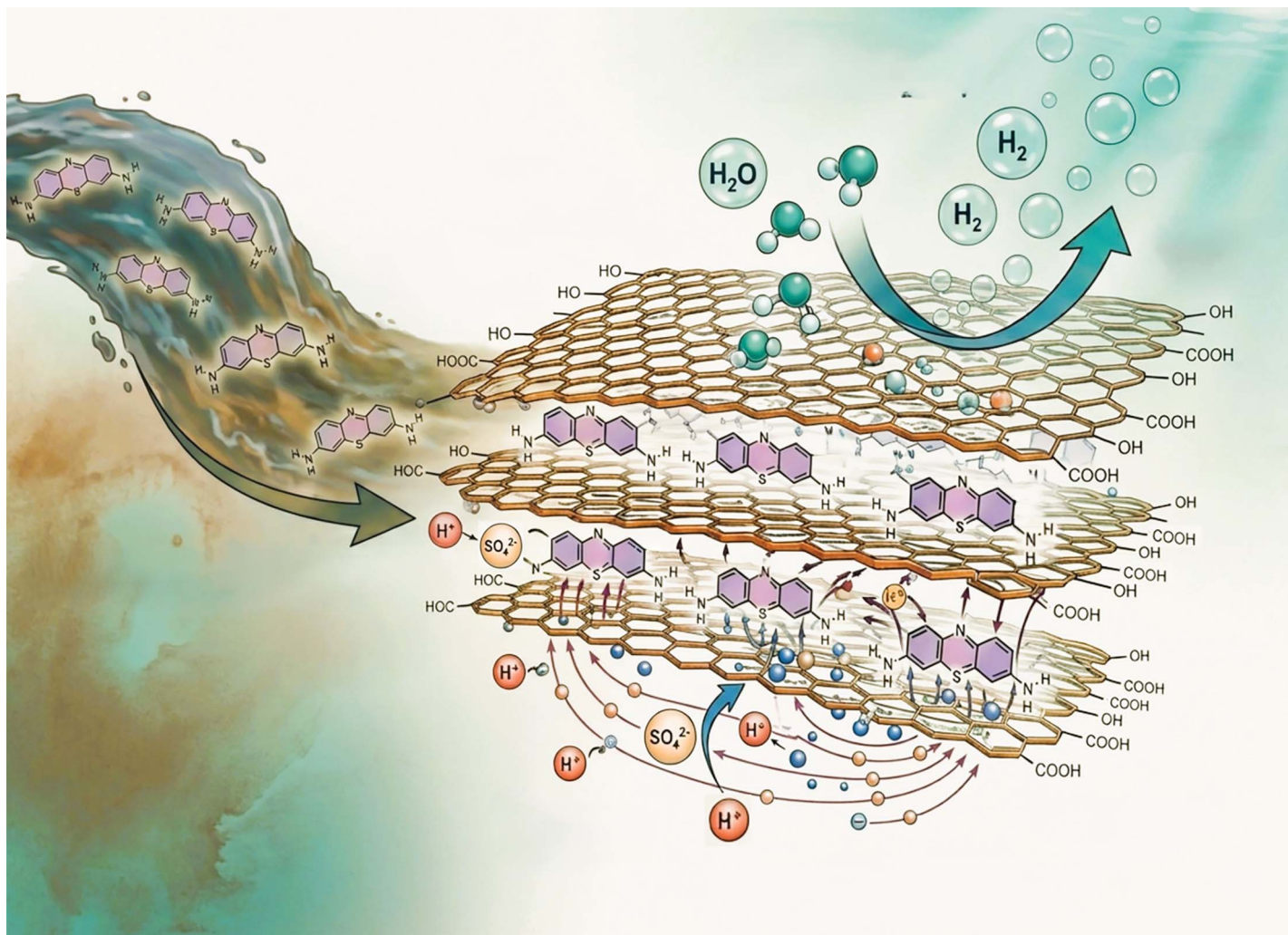
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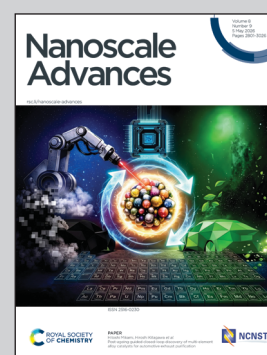
Showcasing research from Dr Ehab N. El Sway's lab (NanoElectrochemistry Lab), Department of Chemistry, School of Sciences and Engineering, The American University in Cairo, Egypt.

Graphene oxide nanoribbons grafted with thionine as versatile materials for energy storage and hydrogen evolution electrocatalysis

This work addresses global environmental and energy challenges by immobilizing toxic thionine dye onto graphene oxide nanoribbons (GONRs) to create a high-performance, multifunctional composite. Through hydrothermal and room-temperature synthesis, this research developed eco-friendly electrodes that simultaneously tackle dye remediation and advanced energy storage and conversion. The room-temperature composite achieved an impressive specific capacitance of  $732 \text{ F g}^{-1}$ , maintaining over 100% stability after 10 000 cycles, while the hydrothermal variant demonstrated efficient hydrogen evolution with a low overpotential of 122 mV. This dual-purpose material marks a significant step forward in integrating wastewater treatment with sustainable energy storage and green fuel generation.

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As featured in:



See Ehab N. El Sawy *et al.*, *Nanoscale Adv.*, 2026, **8**, 2908.