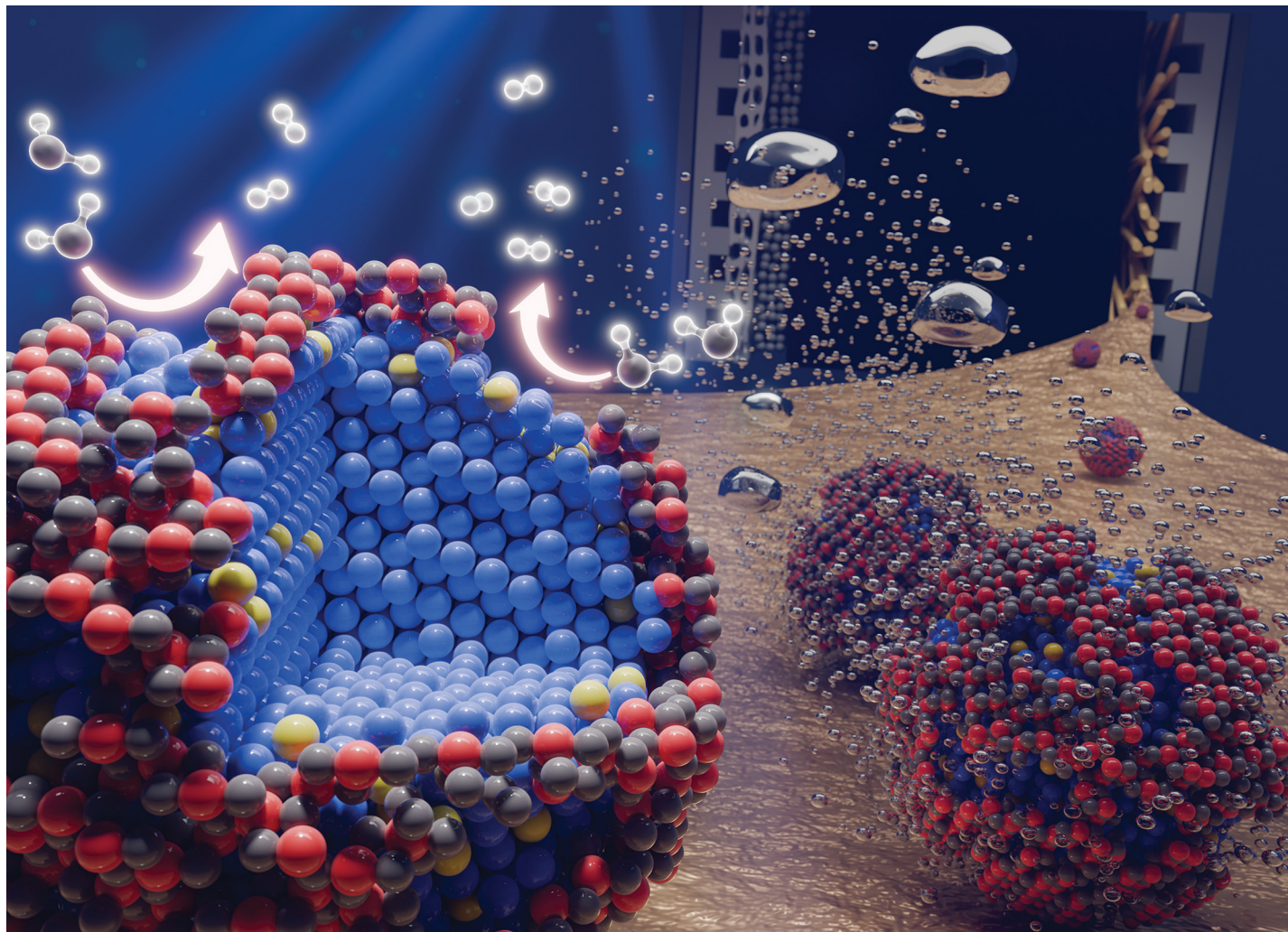


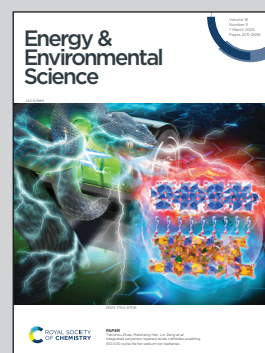


**Showcasing research from Professor Kim's laboratory,
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**A ruthenium–titania core-shell nanocluster catalyst for
efficient and durable alkaline hydrogen evolution**

Revealing a breakthrough in catalyst design, this study presents a core-shell nanocluster (CS-Ru-40), featuring a 1-nm-sized Ru core surrounded by a porous/reduced titania monolayer with dispersed Mo atoms. This unique architecture enhances interfacial synergy, accelerating water dissociation and hydrogen desorption, resulting in an ultra-low overpotential of 2 mV at 10 mA cm⁻² and exceptional AEMWE activity. These findings establish CS-Ru-40 as a promising cathode catalyst for next-generation alkaline water electrolysis.

As featured in:



See Bingyi Yan, Sung Jong Yoo,
Chan Woo Lee, Jin Young Kim *et al.*,
Energy Environ. Sci., 2025, **18**, 2243.