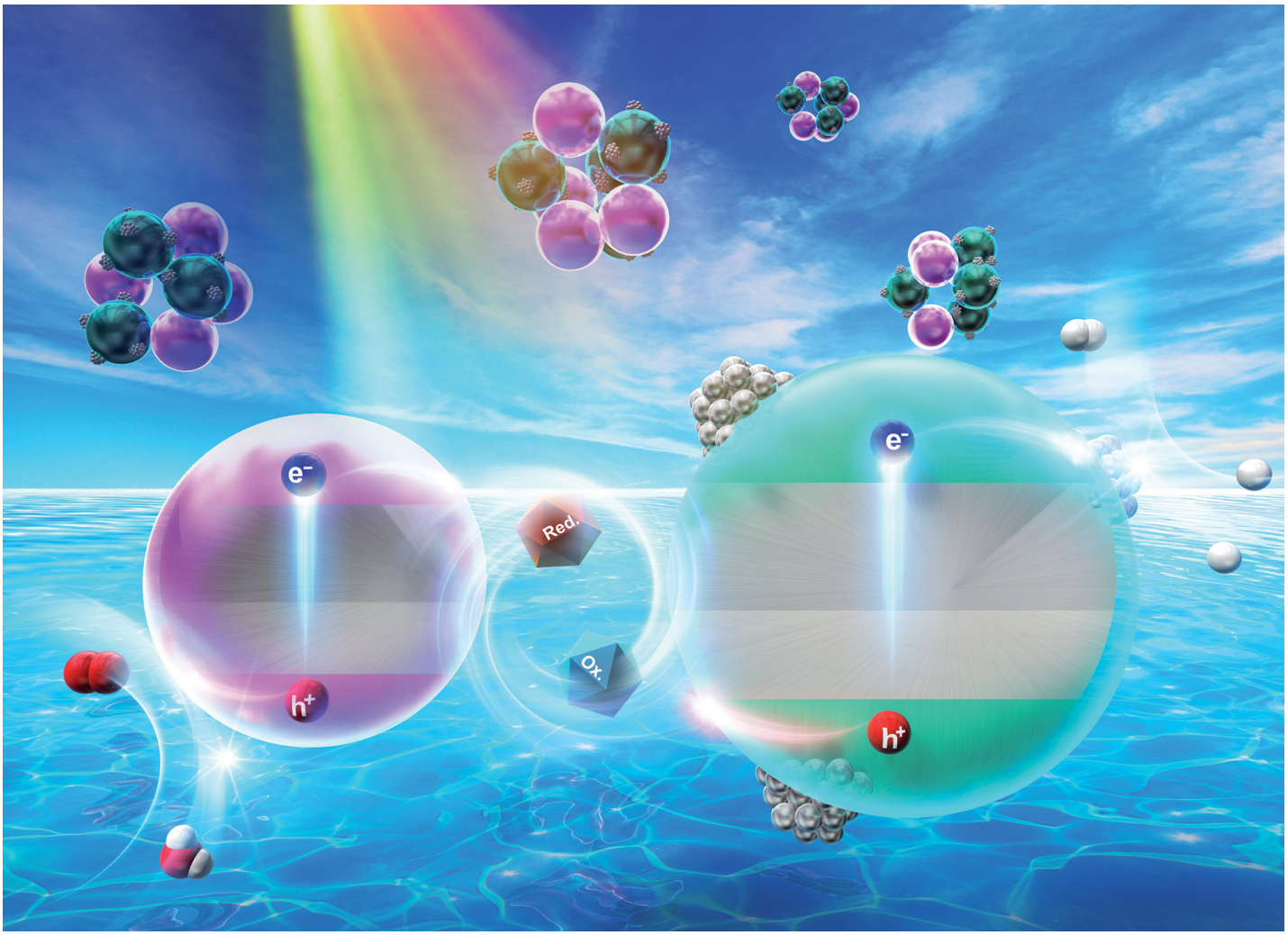

Showcasing research from Prof. Yuichi Negishi's laboratory, Tokyo University of Science, Japan

Activation of hydrogen-evolution reactivity in an Rh-doped $SrTiO_3$ photocatalyst under visible-light irradiation by loading with controlled platinum nanoclusters

Rhodium-doped strontium titanate ($SrTiO_3$:Rh)-based photocatalysts have long been studied because they can produce hydrogen (H_2) from abundant visible light and water in Z-scheme water-splitting systems. Further improvement of the H_2-evolution reaction (HER) activity of $SrTiO_3$:Rh is desired to enhance Z-scheme water splitting. In this study, we established the synthesis method of hydrophilic ~1 nm platinum nanoclusters (Pt NCs) using a ligand-exchange method while maintaining the geometric structure, and loaded method the Pt NCs onto $SrTiO_3$:Rh. The Pt NC-loaded $SrTiO_3$:Rh exhibited HER activity that is 30% higher than the Pt cocatalyst-loaded $SrTiO_3$:Rh prepared using the conventional photodeposition method.

As featured in:

See Tokuhisa Kawawaki, Yuichi Negishi *et al.*, *Energy Adv.*, 2023, **2**, 1148.

ROYAL SOCIETY OF CHEMISTRY

rsc.li/energy-advances

Registered charity number: 207890