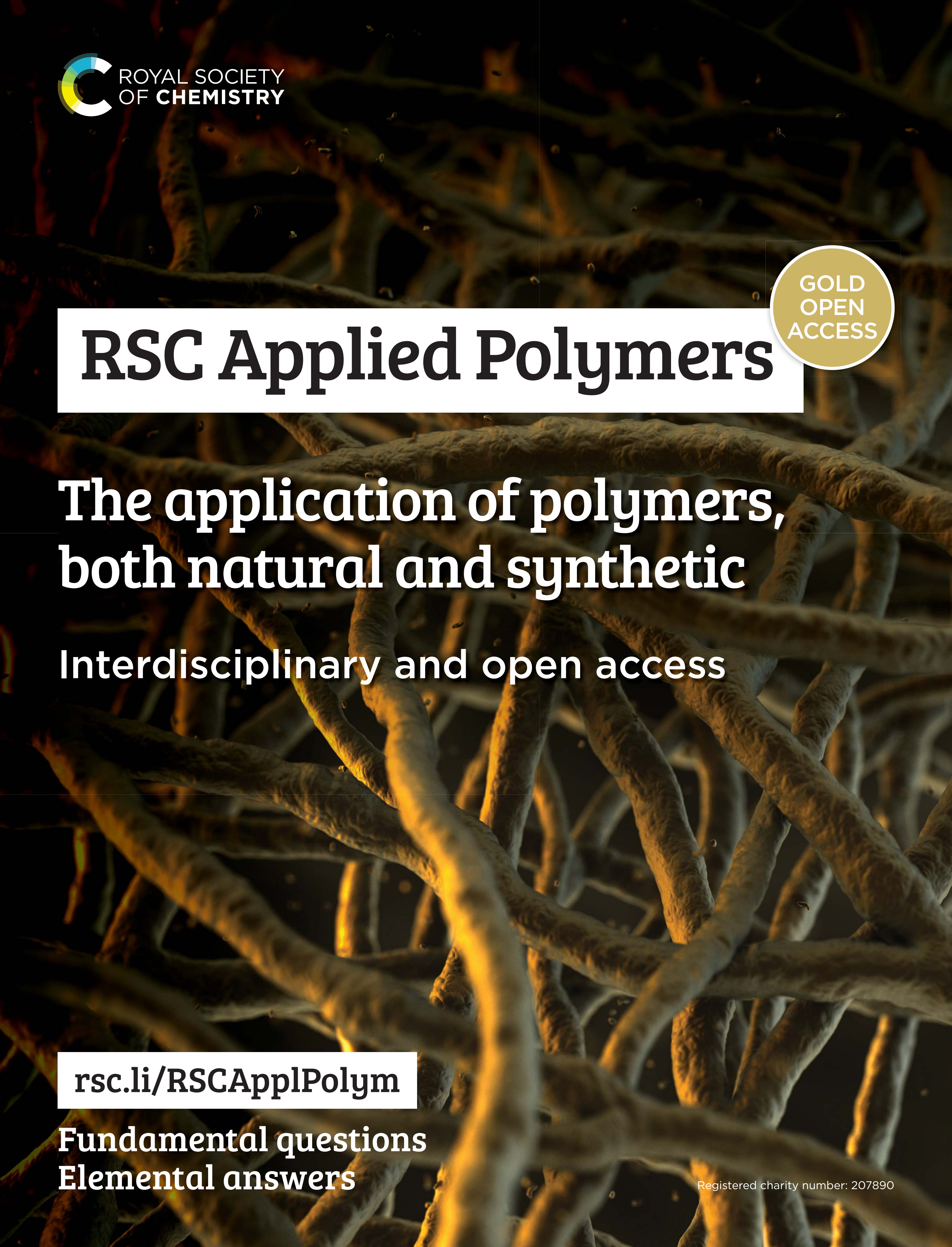
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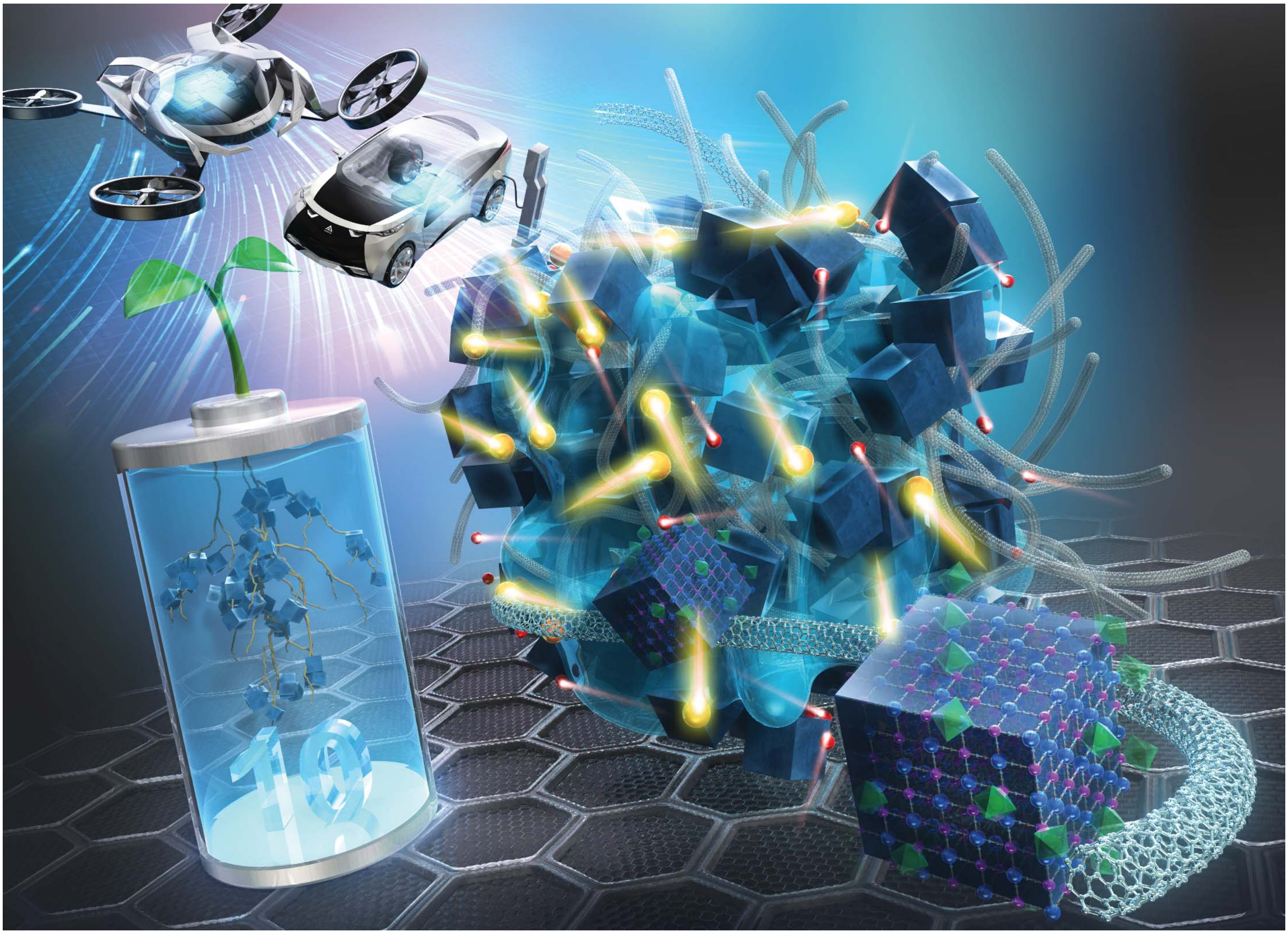
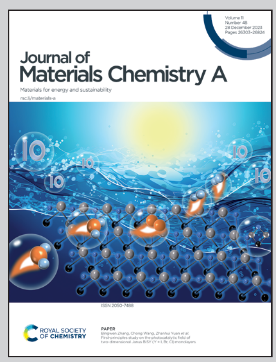


Showcasing research from Professor Kurihara's and Associate Professor Ishizaki's research group, Faculty of Science, Yamagata University, Japan.

High-density cathode structure of independently acting Prussian-blue-analog nanoparticles: a high-power Zn–Na-ion battery discharging ~200 mA cm^{-2} at 1000C

A binder-free cathode is constructed using water-dispersible metal-hexacyanoferrate (MHCF) nanoparticles (NPs) for independently interacting with single-walled carbon nanotubes (SWNTs). As nanometer-scale spaces between the NPs are filled with electrolytes, this unique structure resembles a model of plant roots (SWNTs) entangling sands (NPs) to hold water (electrolytes). The root-sand-water (RSW) model cathode drastically increases the C-rate capabilities by shortened ion-diffusion lengths of densely stacked ZnHCF NPs and realizes an ultrahigh current density/power density of 198 mA cm^{-2}/246 mW cm^{-2} by full-discharging the theoretical capacity at 1000C in Zn–Na-ion batteries.

As featured in:



See Manabu Ishizaki, Masato Kurihara *et al.*, *J. Mater. Chem. A*, 2023, **11**, 26452.