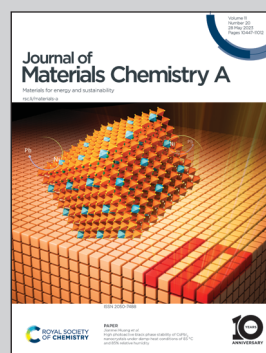


**Showcasing research from Professor Soorathep Kheawhom's laboratory, Department of Chemical Engineering, Chulalongkorn University, Bangkok, Thailand.**

Unveiling the role of water in enhancing the performance of zinc-ion batteries using dimethyl sulfoxide electrolyte and manganese dioxide cathode

The addition of water can improve the performance of dimethyl sulfoxide (DMSO)-based zinc-ion battery (ZIB) having a delta-type manganese dioxide cathode. The existence of water in DMSO electrolytes can lead to changes occurring in the  $\text{Zn}^{2+}$  intercalated phase. A Zn-birnessite when replaced by a super-hydrated Zn-buserite provides a much improved solid-phase diffusion of  $\text{Zn}^{2+}$  and surface kinetics. The optimized battery yields the highest capacity of 224 mAh/g and can cycle over 2,500 cycles.

**As featured in:**



See Soorathep Kheawhom *et al.*,  
*J. Mater. Chem. A*, 2023, **11**, 10584.