

# Progress, challenges, and perspectives of rechargeable aqueous zinc batteries

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**Abstract:** Rechargeable aqueous zinc batteries (RZBs) stand out from electrochemical energy storage technologies for the advantages of low cost, high safety, environmental benignity, material abundance and considerable performance. However, RZBs suffer from poor reversibility of Zn anode and sluggish  $Zn^{2+}$  insertion kinetics in Zn-host materials. It is highly desirable to develop high-capacity cathode materials with reversible  $Zn^{2+}$  (de)intercalation, dendrite-free zinc anode, together with compatible electrolytes. Here, we intend to discuss recent progress and future perspective in exploring manganese and vanadium-based cathode materials, formulation of mildly acidic electrolyte, and structural tailoring of Zn anode for RZBs.

## References:

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Fangyi Cheng received PhD in 2009 from Nankai University, where he was appointed as Assistant Professor in 2009 and promoted to Associate Professor in 2011. He has been full professor since 2016. His group has broad research interests in materials chemistry and energy storage technologies, with focus on nonstoichiometric electrode materials. He serves in editorial board of several journals including *Research*, *eScience*, *Nano Materials Science*, *Acta Physico-Chimica Sinica*, etc. He is among the Clarivate Highly Cited Researcher (2018–2020).