



# IAPME Seminar

## Multiscale hybrid design to tune catalyst activity



**18 December 2025**

Prof. Xingke CAI  
Shenzhen University  
Venue: N23-4018  
Time: 10:30 - 11:30  
Hosted by: Prof. Qing LI

### Abstract

Multi-electron electrocatalytic reactions usually suffer from sluggish kinetics, leading to high over-potentials and low energy-conversion efficiencies. The reaction kinetics are directly governed by the activity of the catalyst. In this presentation, I will talk about our strategies to accelerate kinetics by tuning the electronic structure of active sites with heteroatoms. Through materials design, three levels of increasing structural precision, i.e. interfacial hybridization, intrinsic doping and atomically precise hybridization, have been implemented and validated.

### Biography

Prof. Xingke CAI is currently as a Professor in Shenzhen University. He has published 55 first/corresponding author papers in top-tier journals, such as Nat. Nanotechnol. Nat. Commun., Adv. Mater., Chem. Soc. Rev., J. Am. Chem. Soc, with over 5000 citations. His research mainly focuses on the preparation of two-dimensional oxides/hydroxides and their applications.