



**Showcasing research from Professor Cunpu Li's laboratory,  
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Toward robust lithium-sulfur batteries *via* advancing  $\text{Li}_2\text{S}$   
deposition

Lithium-sulfur batteries can deliver about 2 - 3 times the energy compared with commercial lithium-ion batteries. However, there exists a common misunderstanding that lithium polysulfide conversion is a stepwise reaction: where  $\text{S}_8$  is reacted to liquid polysulfides, then the liquid polysulfides further react to solid  $\text{Li}_2\text{S}_2/\text{Li}_2\text{S}$ . We find in practical working conditions, the discharge/charge process of battery is cross-executed rather than a stepwise reaction. Thus, a  $\text{GeS}_2\text{-MoS}_2$  "butterfly" heterostructure was designed to facilitate the conversion of LiPSs and advance the deposition of  $\text{Li}_2\text{S}$ , thereby achieving robust lithium sulfur batteries.

**As featured in:**



See Cunpu Li, Cheng Tong,  
Zidong Wei *et al.*, *Chem. Sci.*,  
2024, **15**, 7949.