



Showcasing research from the laboratory of Dr Zhenhai Xia at University of North Texas, Denton, TX 76203, USA

Title: Role of lattice defects in catalytic activities of graphene clusters for fuel cells

Defects are common but important in graphene, which could significantly tailor the electronic structures and physical and chemical properties. Our results show that graphene clusters, with point defects, having pentagon rings at the zigzag edge, or line defects (grain boundaries) consisting of pentagon–pentagon–octagon or pentagon–heptagon chains at the edges, show electrocatalytic capability for the oxygen reduction reaction. Four-electron and two-electron transfer processes could occur simultaneously on graphene clusters with certain types of defects. The energy barriers of the reactions are comparable to that of platinum.

As featured in:



See Zhenhai Xia et al.,  
*Phys. Chem. Chem. Phys.*,  
2015, 17, 16733.



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