

## Synthesis of Sub-10 nm Pd-Pt Core-Shell Cubes and Octahedra, and Their Electrocatalytic Properties

김인호, 유태경<sup>†</sup>  
경희대학교  
(tkyu@khu.ac.kr<sup>†</sup>)

Core-shell nanocrystals with well-defined shapes could be one of the ideal catalysts for various electrocatalytic reactions including oxygen reduction reaction (ORR) and formic acid oxidation reaction (FOR). This paper describes a simple, aqueous-phase route to the synthesis of Pd-Pt core-shell cubes and octahedra by heterogeneous seeded growth of Pt shell on well-defined Pd cubes and octahedra. All core-shell nanocrystals are less than 10 nm and the thickness of Pt shells on Pd nanocrystals are ultra-thin, less than 1 nm. We have also investigated the electrocatalytic properties of the Pd-Pt core-shell nanocrystals, demonstrating Pd-Pt core-shell octahedra bounded by {111} facets exhibited higher activity than cubes enclosed by {100} facets towards both ORR and FOR.