

Atomically dispersed hollow Mn-NC particles for oxygen reduction reaction electrocatalysis

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The oxygen reduction reaction (ORR) at fuel cell is a slow reaction and a large amount of Pt catalyst is required to use it. However, since Pt-based noble metals are very expensive, research is underway to reduce the amount of noble metals or to replace Pt-based noble catalysts. metal-nitrogen-carbon (M-N-C) catalysts have been reported as promising electrocatalysts for fuel cell to replace noble metal catalysts. Among the methods of preparing various M-N-C catalysts, the carbonization of metal organic frameworks are one of the simple ways to synthesize nitrogen-doped carbon. MOF are known highly porous crystalline solids constructed from metal ions or clusters covalently linked by organic ligands. Although many studies have been reported that M-NC catalysts have better performance than Pt catalysts, Fe based catalysts have been mainly studied. Fe-NC catalysts have excellent performance; the new M-N-C catalyst should be replaced as it is less stable due to the fenton reaction. In this study, Mn based M-NC catalyst was synthesized because Mn was less affected by the fenton reaction. Mn-NC catalyst showed excellent ORR activity and durability