# Ordered Mesoporous 3D Graphene-Like Carbon Frameworks with Tubular Structure for Efficient Alkaline Hydrogen Evolution Reaction

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Ordered mesoporous carbons (OMCs) have been exploited in a wide range of industrial fields such as energy conversion and storage, catalysis, and gas adsorption. However, the previously reported OMCs showed trade-off relation between surface area and electrical conductivity. In this work, we synthesize ordered mesoporous 3D graphene-like carbons (OMGCs) constructed with tubular structures. OMGC synthesis can be realized by a dual templating method using mesoporous silica and in situ-generated molybdenum carbide as the *exo*- and *endo*-templates, respectively. The OMGCs simultaneously achieve a large surface area and high electrical conductivity. Benefitting from these advantages, Ru nanoparticles (NPs) supported on the OMGC show superior catalytic activity for alkaline hydrogen evolution reaction and anion-exchange-membrane water electrolyzer to Ru NPs on other OMCs and commercial Ru/C and Pt/C catalysts.