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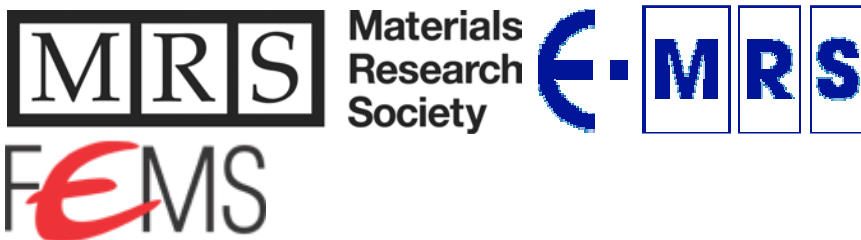
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Synthesis and characterization of Pd nanocatalyst at tungsten carbide based support for fuel cells application

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Tungsten carbide was prepared by polycondensation of resorcinol and formaldehyde in the presence cetyltrimethylammonium bromide (CTABr) surfactant. Pd nanocatalyst at this support was synthesized by borohydride reduction method. The obtained materials were characterized by XRD, HRTEM, EELS, XPS and electrochemical measurements. TEM analysis revealed Pd nanoparticles size in the range of a few nanometers, even the clusters of Pd atoms. X-Ray Photoelectron Spectroscopy was applied to determine surface composition of the substrates. The presence of palladium based species was revealed. The catalytic activity for the hydrogen oxidation reaction and oxygen reduction were investigated in 0.5 M HClO₄ by cyclic voltammetry and linear sweep voltammetry at the rotating disc electrode. The catalysts' activities were compared to the carbon supported Pd nanoparticles (Vulcan XC 72). WC supported Pd nanoparticles have shown higher CO tolerance, compared even to Pt based catalyst.

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