

## Pt-NiTiO<sub>3</sub>/C Catalyst Synthesized by the Microwave Assisted Method for Direct Alcohol Fuel Cell Applications.

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### ABSTRACT

Pt-NiTiO<sub>3</sub> catalyst supported on Vulcan XC-72 (Pt-NiTiO<sub>3</sub>/C) was prepared by microwave-assisted polyol method. Nickel titanate (NiTiO<sub>3</sub>) powders were synthesized by wet-chemical method using nickel acetate and titanium isopropoxide as metal sources and citric acid as complexing reagent. The precursors were calcinated at 700°C for 3h in air atmosphere. Results from TEM characterization revealed NiTiO<sub>3</sub> nanoparticles having homogeneous morphology with particle size in the range of 30 to 50 nm. To obtain the Pt-NiTiO<sub>3</sub>/C catalyst, NiTiO<sub>3</sub> nanoparticles and Vulcan were mixed by magnetic stirring in an ethylene glycol solution. Afterwards, H<sub>2</sub>PtCl<sub>6</sub>·6H<sub>2</sub>O was added maintaining stirring. The mixture was submitted to microwave irradiation under on/off pulses. The Pt-NiTiO<sub>3</sub>/C catalyst was evaluated as cathode in acid and alkaline medium.

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**Keywords:** Pt-NiTiO<sub>3</sub> catalyst; microwave-assisted polyol method; Oxygen Reduction Reaction; Direct Alcohol Fuel Cells.

