Un-supported PdCo Aerogel electrocatalyst to ethanol electroxidation reaction

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ABSTRACT

Microfluidic fuel cells (MFCs) have received a great deal of attention in the last two decades for their high utility and versatility in portable electronics devices. Microfluidic-fuel cell technology, used a liquid electrolyte, which show a great advantage compared to cells that include conventional polymer membranes (physical barrier). To date, different MFC configurations have been designed, in which different types of fuels have been used, the implementation of high electrocatalysts materials is the key for improvement performance of real devices applications.

The present work shows a high performance in a MFC with 1M ethanol as fuel in KOH 1 as alkaline media, the excellent performance is due to use of Pd-Co based aerogels as anode inside of microfluidic cell configuration. The Pd-Co aerogel was obtained by solgel synthesis, which was carried out in a microwave and its subsequent drying by lyophilization. Microfluidic fuel cell evaluation show up to 14 mW cm^{-2} and a current density of up to 100 $mAcm^{-2}$ using a very low loading of Pd-Co aerogel just 0.1 mg.

Keywords: un-supported aerogel, microwave heating, microfluidic fuel cell, ethanol.