Enhanced activity of Pt/Mesoporous W_2C microspheres for methanol oxidation

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Tungsten carbides preserved the various structure have been applied to the electrochemical system such as low temperature fuel cells (DMFC, PEMFC), because they show high activity for MOR, HOR and ORR with minimal loading of platinum. When small amount of Pt is loaded on tungsten carbides, the electroactivity can be enhanced due to the synergistic effect between Pt and WC's. And also, these electroactivities can be changed due to the different physicochemical properties of support, tungsten carbides. Considering this fact, we have fabricated the various structures and phases of tungsten carbides preserved the high physical properties and good electro-activity via polymer induced carburization method. Especially, 7.5wt% Pt loaded mesoporous W2C microspheres show the higher electroactivity (mA/mg of Pt taken at 0.75V - Ag/AgCl) for methanol oxidation than those of microporous W2C microspheres and commercial 20wt% PtRu/C (E-Tek) catalyst.