

Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

Novel Cu and Co oxide based catalysts for PEMFC obtained by plasma-enhanced metal-organic chemical vapor deposition PEMOCVD¹
PIOTR KAZIMIERSKI, LUKASZ JOZWIAK, RYSZARD KAPICA, Division of Molecular Engineering, Faculty of Process and Environmental Engineering, Technical University of Lodz, Poland, ADAM SOCHA, Institute of General and Ecological Chemistry, Technical University of Lodz, Poland — The study concerns none noble metal catalytic films for Proton Exchange Membrane Fuel Cell (PEMFC), based on cobalt and copper oxides, including mixed oxide known as spinel type $\text{Cu}_x\text{Co}_{3-x}\text{O}_4$ ($x = 0, 0.3, \text{ and } 1.0$). Thin catalytic layers were obtained from cyclopentadienyldicarbonyl-cobalt(I) and copper (II) acetylacetonate by plasma method called plasma enhanced metal-organic chemical vapor deposition (**PEMOCVD**). Organic precursors were introduced to the reactor with carrier gases like argon, oxygen or mixture of both. Then deposited layers were analyzed by means of Scanning Electron Microscopy (SEM), Energy Dispersive X-ray Spectroscopy (EDS) and electrochemical methods such as single cell test and cyclic voltammetry CV. In all types of investigated materials catalytic activity was observed. Single cell test showed that the best results were attained for the layers deposited in pure argon plasma. To learn more about the phenomenon, a number of CV tests were performed.

¹The above work was partially supported by Polish Ministry of Science and Higher Education in the framework of research Grant No. N507 451134.

Piotr Kazimierski
Div of Molecular Engineering, Faculty of Process and Environmental
Engineering, Technical University of Lodz,
Wolczanska 213, 90-924 Lodz, Poland

Date submitted: 12 Jun 2010

Electronic form version 1.4