



## CATALYST FOR DIRECT ETHANOL FUEL CELL

**Egberto Gomes Franco**  
**Paulo Lucas Dantas Filho**  
**Geraldo Francisco Burani**  
**Carlos Eduardo Rollo Ribeiro**  
**Flavio Taioli**

*egberto@iee.usp.br*

*dantas@iee.usp.br*

*burani@iee.usp.br*

*carlosrr@estadao.com.br*

*flaviotaioli@uol.com.br*

Instituto de Eletrotécnica e Energia - IEE - USP

Rua Professor Luciano Gualberto, 1289 - Cidade Universitária

CEP 05508-010 - Butantã - São Paulo SP - BRASIL

Phone: (5511) 3091-2500 - Fax: (5511) 3812-3352

**Abstract.** *In order to reduce the environmental impact of GHG emissions, ethanol as primary fuel and fuel cells technology could be employed together. However ethanol fuel cell has major drawbacks to be overcome. One of the major concerns of direct ethanol fuel cells are the electrocatalyst systems to be developed. In this work we synthesized two different catalyst systems PtRuDy and PtU. Each system presents good electrochemical activity and the PtRuDy shows results similar to the PtSn system described in literature. The PtU system shows a promising result when operated with ethanol and after this with hydrogen and oxygen again. It is well established that electrocatalyst systems as PtRu when operated with alcohols these systems show a huge degradation when operating with hydrogen again. PtRuDy system shows 46% of degradation while operating with ethanol and turning back to hydrogen. PtU system shows no degradation at all after operating with ethanol 1.0 mol L<sup>-1</sup> and turning to hydrogen again.*

**Keywords:** *Fuel Cells, Ethanol, Biomass, Hydrogen.*