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 promise result when operated with ethanol and after this with hydrogen and oxygen again. It is well established that electrocatalysts systems as PtRu when operated with alcohols these systems shows 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⁻¹ and turning to hydrogen again.

Keywords: Fuel Cells, Ethanol, Biomass, Hydrogen.