

Ethanol Reforming in Hybrid Plasma-Catalytic System

A study was conducted on the influence of the reaction chamber material on hybrid plasma-catalytic ethanol reforming. A comparison was made between the reforming in quartz and steel reaction chamber with the same geometry. Discharge behavior was investigated using current and voltage oscillograms, optical emission spectra and video capture. The composition of gaseous reforming products was determined via gas chromatography. The study showed the disappearance of NO bands from plasma torch emission spectra after the addition of ethanol into a reaction chamber. Rotational and vibrational temperatures of species inside plasma torch were shown to be independent of the flow of introduced ethanol. Research showed that reforming using steel reaction chamber had increased reforming efficiency and hydrogen energy yield in comparison with reforming using quartz reaction chamber.

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