

FUEL CELL PROTON EXCHANGE MEMBRANE - PRESENT AND PERSPECTIVES

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Abstract. *The fuel cells could contribute to the reduction of the pollution emission and the fossil fuels due to the conversion efficiency which is higher than the other energy conversion systems. There are many possibilities to improve the efficiency and to reduce the weight of the fuel cells by the integration of new nanostructured materials.*

Keywords: Fuel cells, membrane, Gibbs energy, cluster

1. Introduction

Achievement fuel cells as energy conversion systems, dates back to the mid-nineteenth century. Their operating principle was discovered by Christian F. Schobein. Together with Sir William Grove developed the technology to produce electricity this way. Fuel cells are one of the oldest energy conversion technologies, whose evolution has been slow due to abundant natural resources but which are the base of conventional devices to obtain energy.

An important factor which influenced the development of fuel cells is linked to concerns regarding the consequences of environmental degradation through the use of conventional fuels in electricity generation and propulsion motor field. Oil dependence of industrialized and super industrialized countries was evident from the moment of opening oil crisis. Fuel cells can influence the reducing dependence on conventional combustibles and can reduce emissions in the atmosphere.

Using pure hydrogen, electrochemical cells do not produce waste being also a source of pure water or heat. Energy production using wind power or solar energy waves develop in parallel with progress in fuel cells technology. Pooling the results based on these technologies for producing and storing hydrogen, which can be used in electrochemical cells for obtaining energy, will contribute substantially to maintaining environmental quality and public health.

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