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Editorial

Materials to be used in the energy industry

The conventional industry, which generates, transmits and makes distribution of energy to be used by our society has established an ample variety of materials that guarantees the success of such a work. Processing oil and utilizing natural gas and their derivatives, for example, has required an important improvement of steels used in fuel production, relative to the corrosion and hydrogen embrittlement resistances and of composite materials for flexible tubes. Steels and special coatings for high temperature work and a variety of catalysts were developed for refineries. Simultaneously, as the oil and gas industry increase their activities on the creation of new materials, it opens an increasing space for special materials used by the companies that produce energy from renewable sources. Much innovation has been presented concerning materials for hydroelectric plant turbines, for wind generators components and to be used in last generation photovoltaic solar cells. But, these are types of fossil and renewable energies in extensive use nowadays and, because of that, they are better known. It's worth to drive the attention of the scientific and business communities to the great creative activity working on the development of materials for the hydrogen energy. In this case, for example, tanks to store gaseous hydrogen under high pressures, of about 700 bar, are needed. High density polymers and carbon fiber based composite materials are expected to guarantee the required mechanical resistance and also gas tightness. Solid oxide fuel cells work at high temperatures, above 650°C, and face the challenge to ensure mechanical compatibility among metallic and ceramic materials in oxidant and reducing environments. Particularly, an important development takes place on ceramic materials with perovskite structure, showing special electrocatalytic properties. This includes the capacity to promote on the anode the direct oxidation of hydrogen and even of more complex fuels, such as biomethane and ethanol, to allow their direct utilization, without previous reforming. And, in addition to that, the ability to promote the efficient reduction of oxygen on the cathode, with an appropriate perovskite. *Materia*'s Editorial Board will be happy to work these themes out on an article of your authorship submitted for publication. Don't hesitate!

Cordially,

Paulo Emílio V. de Miranda
Editor-in-Chief
Materia Journal