

ENI AWARD 2009

Environment Protection Prize

Winner

G rard Ferey

Rational Creation of New Porous Hybrid Materials for the Efficient Sequestration at Room Temperature of Large Amounts of Greenhouse Gases (CO₂ and Methane)

Biography

Professor Ferey is an international expert on porous solids, on which he has written from 1992 onwards over 450 articles on many specialized magazines such as the Journal of Solid State Chemistry, Solid State Sciences, Chemistry of Materials, Angewandte Chemie International Edition, the Journal of the American Chemical Society and Science.

His research group, based at the Institut Lavoisier of the University of Versailles, where G. Ferey is Professor above scale, is formed by a few young researchers and is assisted by researchers and engineers from the CNRS (Centre National de la Recherche Scientifique).

Their innovative research is focused on inorganic and hybrid porous solids with microscopical holes (MOFs) which are very useful particularly in petrochemistry, catalysis, gas separation and fine chemistry fields.

This research field is becoming increasingly relevant because of the importance of these materials in hydrogen and CO₂ storage as well as in the production of electrode materials, because of their combination of inorganic (metal ions) and organic components (mostly stiff organic molecules that make up one, two or three dimensional porous structures).

Prof. Ferey also owns some patents on these important researches, for which he has also received many important scientific recognitions, such as: his admission to the Acad mie des sciences de l'Institut de France in 2003, his Royal Society of Chemistry *Fellowship* in 2005 and the Gay-Lussac-Humboldt Award assigned by the Alexander Von Humboldt Foundation. He has been and still is on the advisory board of several scientific magazines (Inorganic chemistry, Journal of Solid State Chemistry, Chemistry of Materials), between 1988 and 1992 he has also been named Deputy Director of the CNRS Chemistry Department; he is currently the President of the National Committee of Chemistry.

Reasons for the choice

The work of Prof. Gerald Ferey is focused on the adsorption and sequestration at room temperature of greenhouse gases, with particular attention towards carbon dioxide and methane, in order to give a contribution to the protection of the environment. His strategy is aimed at creating crystalline structures in a rational way, mainly organic and inorganic solids with large pores able to provide space for the inserted species and allow their localization. The objective is pursued through an integrated application of a targeted chemical approach with the theoretical structural prediction by means of the computational chemistry. The potentiality of the obtained solids is of interest for the development of industrial activities specially devoted to environment protection.