ENI AWARD 2011

Protection of the Environment Prize

Winner

Jean-Marie Tarascon

New electrode materials, obtained via eco-efficient processes for the development of sustainable and "greener" Li-ion batteries to boost the use of renewable energies and facilitate the deployment of electric transportation.

Biography

Jean-Marie Tarascon was born in 1953 in France.

He is presently a high merit Professor of Chemistry at the University of Picardie "Jules Verne" in Amiens holding in parallel the 2010-2011 chair on "sustainable energy-society and environment" at the College de France in Paris. He works for the Laboratoire de Réactivité et Chimie des Solides (LRCS) where he created both the Institute of Chemistry of Picardie and the European network of excellence ALISTORE-ERI. He headed both of them till the end of 2010 prior to becoming in charge of the recently created French scientific and technology network on electrochemical energy storage network (RS2E) and taking over the directorship of the new LABEX "STORE-EX" involving seven French laboratories. An outstanding chemist, Jean-Marie Tarascon is involved in materials chemistry, mainly related to innovative energy-storage applications; he gave a significant contribution to the research on superconductivity.

His academic career began in 1977, after the Master of Science in Chemical Engineering at the Université de Bordeaux. Two years later, he obtained his Diplôme d'Etudes Universitaires Générales in Physics and Chemistry while, in 1981, he defended his PhD thesis in Solid State Chemistry at the Université de Bordeaux. After his degree, he joined the Cornell University as post-doctoral researcher, before entering the Bell Laboratories and, after that, Bellcore. During this first part of his scientific career, Professor Tarascon investigated the new high temperature superconducting materials, trying to improve the energy transport with less loss.

In the nineties, Jean-Marie Tarascon became the leader of the Energy-Storage Group at Bellcore, focusing on the Li-ion battery technology in 1991. That year saw an important turning point in his career: he started focusing on new electrodes and polymers, as well as on sustainable synthesis and structure determination of functional nanomaterials. We owe him and his colleagues the plastic Li-ion battery which is presently commercialized. In 1994 he was appointed Bellcore Fellow. In 1995 he left Bellcore to join the University of Picardie, leading the Laboratoire de Réactivité et Chimie des Solides till the end of 2008. Professor Tarascon, Director of LRCS, continues his research on the Li-ion batteries, developing new negative and positive electrodes, organic electrodes for sustainable Li-ion battery and new eco-efficient synthesis processes of cathode materials.

During his life, he received many honours; among them, in 2010, the Japan Materials NIMS Award; in 2009, the prestigious Ordre de la Légion d'Honneur, and the Cheetham Lecture Award from the Materials Research Laboratory of the University of California. He also won the 2004 ISI Award and, in 2002, the European Section Alessandro Volta Medal from the Electrochemical Society.

The relevance of his scientific and professional work is also underlined by the wide amount of appointments and fellowships. For example, Jean-Marie Tarascon was proclaimed in 1999 Corresponding Member of the Académie des Sciences and Member of the New Jersey Inventors Hall of Fame in 2001, while in 2002 he was nominated at the Institut Universitaire de France. In November 2004, he became a Permanent Member of the French Academy of Sciences and, in 2010 he was appointed Energy Chair of the Collège de France.

Author of more than 500 scientific papers, Professor Tarascon also detains about 75 patents in France and in the United States. He combines his research activities with the academic tenure at the University of Picardie. He also worked at the University of California, Santa Barbara, as Visiting Professor.

Jean-Marie Tarascon, Professor and Director of the Institut de Chimie de l'Université de Picardie Jules Verne, highlighted his scientific career with fundamental researches concerning the electric Li-ion batteries. In particular, his awarded Candidature refers to the design of electrodes based on new materials, some of which organic ones, and to the elaboration of new processes for development of more efficient and safer Li-ion batteries.
The availability of high performance and low cost batteries represents a decisive point for a wide diffusion of electric devices, not directly connected to the net. These devices will have an important spin-off on the electric vehicle field in the mobility system, with obvious environmental benefits.
For these reasons, the Scientific Commission of the Eni Award bestowed the "Protection of the Environment Prize" to Professor Jean-Marie Tarascon.