



ENI AWARD 2015

Rome, 8 October 2015 - The 2015 Eni Award ceremony was held today at the Quirinale, in the presence of Italian President, Sergio Mattarella, Eni chair, Emma Marcegaglia and chief executive, Claudio Descalzi. The award, which was established in 2007, has become a point of international reference for research in the fields of energy and the environment. The Eni Award aims to encourage a better use of energy sources and to inspire a new generation of researchers, reflecting the importance Eni places on scientific research and sustainability issues.

The Scientific Committee of the Eni Award is chaired by French academic Gerard Férey and is made up of 27 members including the Nobel laureate Sir Harold Kroto, university deans, researchers and scientists from the world's most important centres of study and research. The Eni Awards were presented, together with the Eni Innovation Awards, to three internal research teams who have distinguished themselves for their level of innovation and business-related results. The research projects were selected by an external committee made up of four members of the Scientific Committee.

In the past thousands of researchers from around the world have presented their research and numerous high-profile personalities have been part of the Scientific Committee. These include as many as 25 Nobel Prize-winners. For the 2015 edition, over 800 submissions were received.

The “New Frontiers for Hydrocarbons” Prize was awarded, for the Upstream area, to **Johan Olof Anders Robertsson**, from Zurich's ETH for recent research, conducted together with Dirk-Jan van Manen, Ali Özbek, Massimiliano Vassallo and Kemal Özdemir. The research focuses on the development of innovative technology for the acquisition and data modelling of prospecting at sea using acoustic (seismic) methods capable of overcoming the current limits of visualisation and characterisation of subsurface features

while continuing to respect the environment. Given that seismic surveying is the basis for all modern oil exploration activities, improved technology makes possible a more accurate reconstruction of the subsurface structures, providing a more reliable impression of high petroleum potential. This will provide an advantage, in both technical and economic terms, for oil and gas projects from the earliest stages of their development.

In the downstream area, the prize was awarded to **Helmut Schwarz** from Berlin's Technische Universität. The work of Professor Schwarz focuses on a fundamental problem of modern research: the activation of methane for its conversion into heavier hydrocarbons (e.g. ethane/ethylene) or oxygenated variants (e.g. methanol and formaldehyde). This direct conversion may make it feasible to exploit the huge reserves of natural gas held in remote fields and easier to transport to the areas of use. This research conducted by Prof. Schwarz, with the combined use of experimental techniques and advanced theoretical approaches, is a source of fundamental knowledge about these reactions and the results are expected to have important technological implications in the near future.

The award in the "Renewable Energy" area was given to **Mercouri Kanatzidis**, from Northwestern University in Evanston (Illinois, USA), an international leader in solid state chemistry. His research concerns the development of new solid state semiconductors capable of recovering waste heat and directly converting it into electrical energy. More specifically, there is the new technique of "nanostructuring" the material of these thermoelectric semiconductors, in other words, adding nanocrystals of certain compositions which, at high temperatures, provide significant performance improvements. Moreover, a record, which had stood for 40 years, was broken for the efficiency in heat-power conversion which has also led to further developments, including the construction of actual thermoelectric generators. As a result of t Professor Kanatzidis' work it could be possible to recover at least 50 GW on a global scale.

Menachem Elimelech, a professor at Yale University, was awarded the "Protecting the Environment" Prize. Prof. Elimelech is considered a pioneer in the application of the "Forward Osmosis" process for the desalination of high-salinity water. This innovative process, which uses low-level heat as an energy source, is also used for the treatment of water associated with oil activities, and has proved to be more efficient with a lower energy

consumption than current desalination technologies, therefore having a positive ecological impact.

Professor Elimelech is considered one of world's leading researchers, as well as an influential figure in the field of water quality and membrane technology for desalination and water reuse.

The two "Research Debut" Awards, which are given to researchers under 30 who have earned a PhD from an Italian university, were awarded to **Daniela Meroni** and **Margherita Maiuri**.

The thesis by Daniela Meroni examines the use of titanium dioxide (TiO₂) in environmental remediation processes which is considered very promising in terms of both cost and its non-toxicity and stability. While some commercial applications are already available on the market, many issues remain., and are outlined in Dr. Meroni's thesis which deals brilliantly with both the theoretical and application aspects developed within the framework of the environmental protection and reclamation processes.

The thesis by **Margaret Maiuri** looks at the primary mechanisms that govern the collection of solar radiation by spectroscopic observation of ultra-short optical pulses. The exceptional scientific quality of her work is demonstrated by the publication of her results in well-respected international scientific journals such as *Science*, *Journal of the American Chemical Society* and *Nature Materials*.

Submissions for the next edition of the Eni Award 2016 have already been published, and can be downloaded from <http://www.eni.com/eni-award/>. The final date for applications is 20 November 2015.

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