



Eni Award: 2020 edition winners named

The Eni Awards 2020 will be presented on 14 October, during an official ceremony held at the Quirinal Palace in Rome, attended by the President of the Italian Republic, Sergio Mattarella.

Rome, 26 May 2021 – Eni is announcing the names of the winning researchers and scientists at the 13th edition of Eni Award. The award has become internationally recognised over the years in the field of energy and environmental research. The Eni Award aims to promote better use of energy sources and encourage new generations of researchers in their work. It bears witness to the importance that Eni places on scientific research and innovation.

The **Energy Transition** award, one of the three major awards recognising the strongest hydrocarbon innovations for decarbonizing the energy sector, goes to **David T. Allen** of the University of Texas. Allen has worked on the highly topical issue of fugitive methane emissions, a greenhouse gas with a much higher global warming potential than CO₂, in the production and carriage of natural gas, with the aim of locating emission points and estimating emission amounts. This is of vital importance today, given that natural gas, of which methane is the main constituent, is a key energy source in the current phase of the energy transition. Professor Allen has contributed to this by developing new tools capable of estimating fugitive emissions with a level of spatial and temporal resolution (respectively by individual sites and to the nearest minute) that allows increasingly comprehensive and accurate inventories to be made, which are necessary to develop highly targeted mitigation strategies.

The **Energy Frontiers** award, for research into renewable energy sources and energy storage, was awarded to **Chintamani Nages Ramachandra Rao**, from the International Centre for Materials Science, Bangalore, for his work on metal oxides,

carbon nanotubes and other materials, as well as on two-dimensional systems, including graphene, boron-nitrogen-carbon hybrid materials and molybdenum sulfide (Molybdenite - MoS₂) for energy applications and green hydrogen production. The latter can, in fact, be achieved through various processes including the photodissociation of water, thermal dissociation and electrolysis activated by electricity produced from solar or wind energy. Professor Rao has worked in all three areas and developed some highly innovative materials.

The same or related materials have also been shown to have beneficial properties for the construction of hydrogen storage systems and supercapacitors with high specific power and an increased number of charge-discharge cycles. The latter are energy storage devices, similar to batteries, which will become an increasingly important part of the renewable energy sector.

The ***Advanced Environmental Solutions*** Award, for research into the protection of air, water and land and the reclamation of industrial sites, went to **Jürgen Caro and Jörg Kärger**, from the Universities of Hanover and Leipzig respectively, for their work leading to the development of micro-imaging techniques for the in-situ observation of diffusive molecule flows in nanoporous materials. These techniques have been applied to allow for the detailed study of diffusion in Metal Organic Framework (MOF) and Covalent Organic Framework (COF) membranes. This work has led to the development of new materials, used in pioneering catalytic membrane reactors, which can improve operating conditions for numerous applications involving separation processes. These materials have demonstrated excellent water permeability and a high degree of selectivity for hydrophilic substances, specifically dyes. The simplicity of the synthesis, combined with the ability to create membranes with the desired specific characteristics, is a very promising step forward in the field of water nanofiltration.

In this year's edition, three awards were given in the ***Young Talents from Africa*** section, established in 2017 on the occasion of the tenth anniversary of the Eni Award and dedicated to talented young researchers from the African Continent. The awards went to **Alaa Abbas** and **Mohamed Ahmed Ismail Tarek**, The American University in Cairo, Egypt and **Djalila Ben Bouchta**, Cairo University, Egypt.

Abbas' proposal relates to the improvement of wastewater treatment and energy production with nanostructured carbon–metal oxide anodes in microbial fuel cells.

Tarek will develop a computational model to improve e-waste management.

Ben Bouchta proposes a multi-disciplinary approach to the provision of energy services to enable the productive use of energy for female entrepreneurs in sub-Saharan Africa.

The ***Young Researcher of the Year*** award is presented every year to two researchers under the age of 30 who have received a research doctorate in an Italian university.

This year the award was won by **Matteo Morciano** and **Francesca De Falco**.

Morciano, a student at the Politecnico di Torino, has developed innovative technologies for passive drinking water production using solar energy. More specifically, he has developed a low-cost and environmentally friendly system for desalinating water, which could offer a possible solution to the water crisis.

De Falco, from the University of Naples Federico II, carried out a study into microplastic pollution, an environmental issue of considerable importance and, in particular, on the impact of synthetic fibres used in textiles, identifying the main release mechanisms of these emerging micropollutants.

In the ***Recognition at Innovation Eni*** section, which recognises the most revolutionary projects developed by Eni's researchers and technical experts, awards were given to:

- **Roberto Millini, Michela Bellettato and Giuseppe Bellussi** for patenting a process of CO₂ mineralisation with natural mineral phases and the use of the products obtained during the making of cement;
- **Giovanna Carpani, Ilaria Pietrini** for the E-Limina (Trademark) technology, linking isotopic and microbial investigations to aid the analysis of the biodegradation of contaminated sites (natural attenuation);
- **Filomena Castaldo, Orazio Lo Chiano, Alessandro Riva** for the ultra-intensified CO₂ bio-fixation technology, which is based on the bio-fixation of CO₂ by microalgae in photobioreactors lit by an artificial light adapted specifically for their optimal photosynthesis.

The award ceremony will take place at the Quirinal Palace on 14 October and will be attended by the President of the Italian Republic, Sergio Mattarella.

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