Researchers design a catalyst that neutralizes gases responsible for climate change

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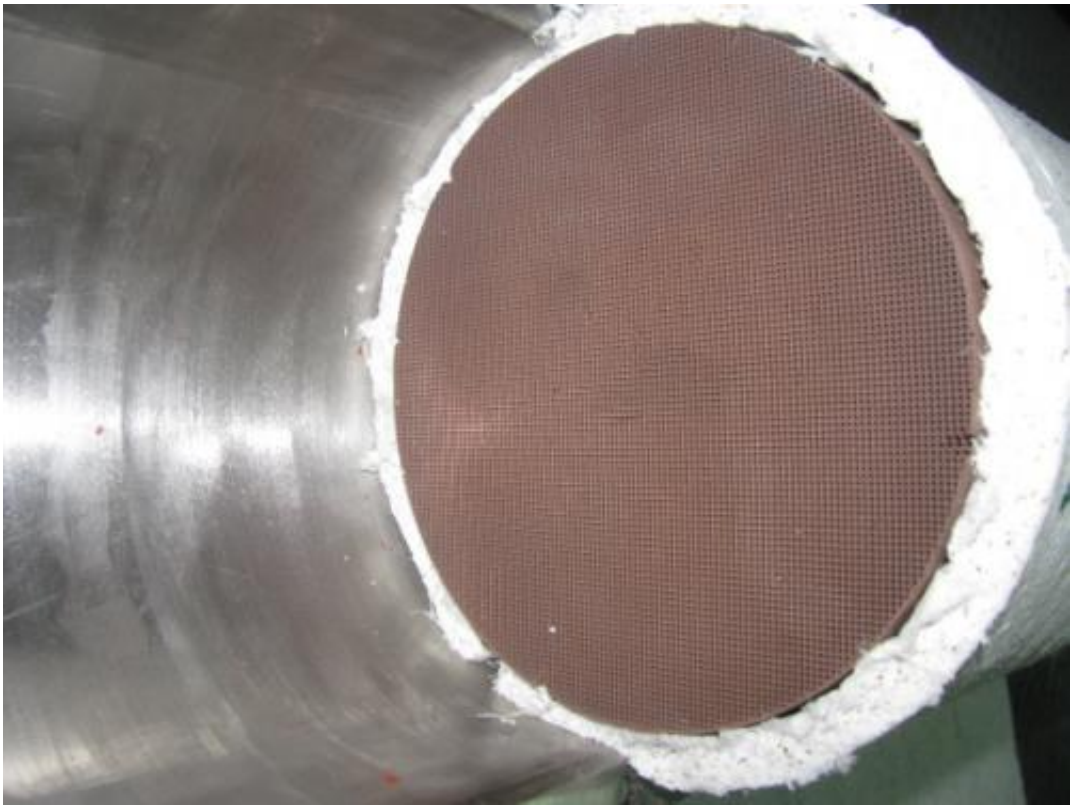

Catalyst.

This new technology, developed by the Research Group in Carbon Materials and Environmental allows, through a catalytic system active, efficient and stable over time, to eliminate nitrous oxide decomposing it into nontoxic products, purifying the gases emitted by industries related to the production of fertilizers, plastics and coal burning plants to

produce electricity or vehicles.

Nitrous oxide is a gaseous compound harmful to the environment which is related to the destruction of the ozone layer and the global warming. "Deleting all nitrous oxide emitted to the atmosphere due to human activities would be equivalent to reducing all emissions of greenhouse gases agreed in the Kyoto Protocol" Agustín Bueno López, researcher in the Carbon Materials and Environment Group explains.

The most promising method among those proposed for the removal of nitrous oxide consists of decomposing it into oxygen and molecular nitrogen which are the main components of air and therefore, they have no adverse effects on health or the environment. The main drawback is that temperatures above 625°C are required so that this breakdown can take place spontaneously, and this temperature is much higher than that contained in polluted gas streams.

"However, nitrous oxide can be decomposed at lower temperatures using a suitable catalyst, but it usually comes along with other gases that inhibit the catalysts that were available heretofore, preventing its implementation on a full scale" Agustín Bueno explains.

Aiming to overcome the limitations, the present invention provides a novel catalyst system capable of working in the presence of inhibitors such as oxygen, other oxides of nitrogen and water vapour at temperatures below 450°C, so it can be used in most of the sources emitting this pollutant gas.

"The catalytic decomposition is carried out by placing the catalyst in a fixed bed reactor through which the gas stream to be purified passes. The composition and temperature of the gas stream varies from source to source, and this is taken into account when implementing the catalyst", Agustín Bueno states.

The technology has been successfully tested in a real plant production of nitric acid and in the exhaust pipe of a state-of-the-art diesel engine, and the tests performed in the laboratory show that it can be applied to various chemical production plants, processes involving oxidation with ammonia, combustion processes of fossil fuels (coal, biomass, waste, etc.). and vehicle emissions (gasoline engines, diesel engines, etc..) among others.

The research work has been carried out over the past eight years at the University of Alicante using public funds entirely, and the results have attracted the interest from several companies involved in the chemical and the automotive industries.

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