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Sustainability - a new catalyst makes chemical processes more efficient and less harmful to the environment

The Politecnico di Milano study, published in Nature Synthesis proposes a more sustainable and economical alternative for the production of complex chemicals used in the manufacture of medicines, food additives and polymers.

Milan, 5 July 2023 - A new discovery by the Politecnico di Milano opens up new perspectives in the field of **sustainable chemical synthesis**, promoting innovative solutions that allow chemicals to be created in a more efficient and environmentally friendly way. The research was **published in the prestigious journal Nature Synthesis**.

Using the innovative technique of dispersing isolated atoms on carbon nitride supports, the team developed a catalyst that is more active and selective in esterification reactions. This is an important reaction in which carboxylic acids and bromides are combined to form products used in the manufacture of medicines, food additives and polymers.

The revolutionary feature of this new catalyst is that it **reduces the use of rare metals**, a significant step towards **conserving critical resources and making processes more sustainable**. In addition, the catalyst can be activated by sunlight, eliminating the need for energy-intensive methods. This discovery holds enormous potential in reducing **dependence on finite resources** and lowering the environmental impact of catalytic processes.

Professor Gianvito Vilé, Associate Professor of Chemical Engineering at the 'Giulio Natta' Department of Chemistry, Materials and Chemical Engineering, coordinated the project, while Mark Bajada, a Marie Skłodowska-Curie Postdoctoral Fellow at the Politecnico di Milano, is the

Media Relations
Politecnico di Milano
T +39 02 2399 2441
M. +39 3666211435
relazionimedia@polimi.it



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first author of the paper. The study was conducted in close collaboration with researchers from the University of Milan Bicocca and the University of Turin, and was **funded by the European Commission through a Marie Skłodowska-Curie Postdoctoral Fellowship** and a Horizon Europe project recently awarded to the Politecnico di Milano (SusPharma).

The Research: <https://www.nature.com/articles/s44160-023-00341-3>

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