



Catalytic materials for wastewater treatment

The invention

A functional catalytic material that selectively oxidises organic molecules utilising molecular oxygen from the air is presented. The materials allow for heterogeneous reactions of molecules of interest within a liquid or in the gas phase with high yield and selectivity under mild conditions.

Selective oxidation catalyst:

Oxidation of bulk chemicals on a large scale requires high temperatures, pressures and/or aggressive, expensive and dangerous chemicals. There is significant interest in the industry for processes that are not only economically more beneficial, but also more environmentally friendly. With this respect, large chemical companies are investing in new processes based on these technologies. An example for oxidation chemistry, demonstrating the demand for novel oxidation catalysts and processes is the HPPO process, where hydrogen peroxide is used instead of other chemicals to facilitate epoxidation of propene over a Titaniumsilicate catalyst (TS-1).

This is a better solution to older processes but it still uses hydrogen peroxide as oxidant, which needs to be produced in the first place. This adds to the production cost of the oxidised chemical. A catalyst that can utilise molecular oxygen from the air as oxidant, can significantly reduce the cost of oxidation processes and thus is a valuable material. Furthermore, the presence of unreacted hydrogen peroxide might be problematic on a large scale.

Intellectual property information

Catalytic materials for wastewater treatment is protected by European patent: [EP3793951](#)

Inventor information

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Benefits

- Functional catalytic material that selectively oxidises organic molecules utilising molecular oxygen from the air.
- The materials allow for heterogeneous reactions of molecules of interest within a liquid or in the gas phase with high yield and selectivity under mild conditions.

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