

Title of the invention:

Method of preparing crystalline TiO₂ nanoparticles on the surface of carbonaceous material derived from lignocellulosic biomass

Inventors:

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Field:

Semiconductors, Optics, Materials, metallurgy, Surface technology, coating, Environmental technology,

Summary:

The invention relates to a low temperature method for the production of crystalline TiO₂ nanoparticles on a surface of carbonaceous material derived from lignocellulosic biomass by means of an ultrasonic-assisted sol-gel method together with the addition of an acid from the hydroxy carboxylic acid group.

Advantages / innovative aspects:

- simplicity of method and low cost of equipment,
- great ability to modify some parameters (e.g. ultrasound intensity),
- the ability to obtain crystalline TiO₂ particles of reproducible size,
- synthesis in a relatively short time and does not require the use of high temperature associated with material calcination.

Keywords:

Sol-Gel, Ultrasound, Photocatalysis, Carbon Materials, Lignocellulosic Biomass, Organic Synthesis, Air and Water Purification.

Use:

Preparation of inorganic-organic hybrid materials which can be potentially used for: a) photocatalytic degradation and oxidation of organic compounds polluting water and air, b) solar cells, c) sensors, d) optoelectronics.

State of the progress:

stage of development

Intellectual property rights:

Patent application no. P.420973 - 24.03.2017 – Poland

Expected cooperation:

contract of sale, licence agreement, cooperation agreement