SOLAR LIGHT- ACTIVATED NANO-TIO2 DOPED WITH SILVER-COVERED ACTIVATED CARBON AND ZEOLITE BASED PHOTOCATALYTICALLY-ASSISTED FILTERING SYSTEM FOR WATER TREATMENT (WATICAZ)

Goal of the project:

The WATICAZ project scope is to develop an innovative water treatment unit characterized by enhanced performance consisted of the photocatalysis-assisted filtering system (PFS) as experimental demonstrator at laboratory scale for the treatment of real drinking water source. This system should exhibit the bifunctional adsorptive and photocatalytic characteristics that can be exploited either as filtering system with the possibility of solar photocatalytic regeneration (SPR) or as advanced oxidation unit to remove/degrade a large range of contaminants from water.

Short description of the project

The photocatalytic-assisted filtering unit using (doped)TiO_2-covered activated carbon/zeolite operated under UV/solar irradiation is developed.

Project implemented by

Partnership between Politehnica University Timișoara and National Institute for Research and Development for Electrochemistry and Condensed Matter

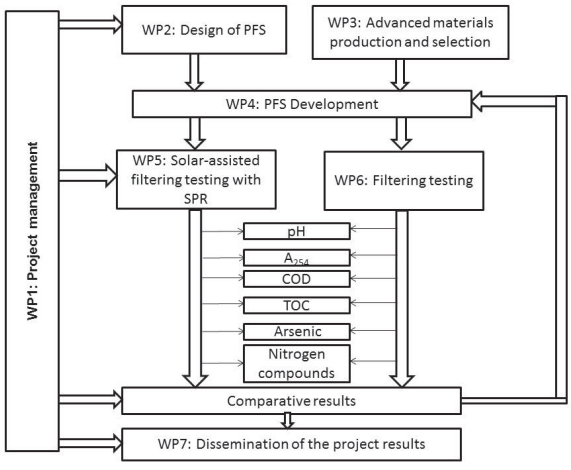
Implementation period

03.01.2017-29.06.2018

The main work packages and tasks are:

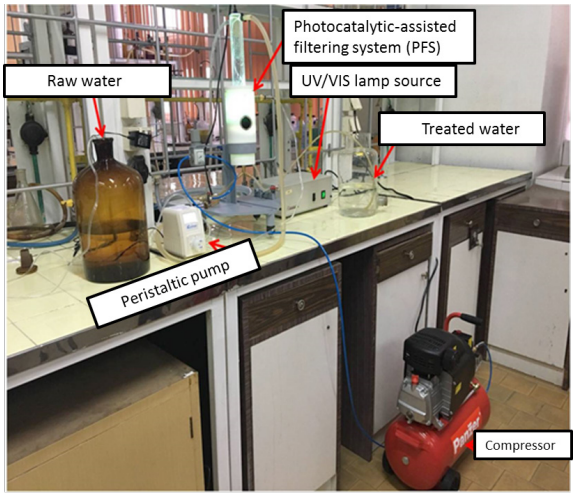
- Project management;
- Design of photocatalysis-assisted filtering system (PFS);
- Filtering materials production and selection *(Synthesis of the filtering materials characterized by the photocatalysis activity; Characterization of filtering materials by XRD, SEM, AFM, BET, DRUV-VIS)*;
- (Solar-assisted) filtering testing (with solar photocatalytic regeneration - SPR) *(Filtering column filling; Functional and operational testing of (solar irradiation photocatalysis-assisted) filtering system; Filtering material regeneration under solar irradiation; Morpho-structural characterization of materials after its usage; Validation by testing for the treatment of the real drinking water source)*;
- Dissemination of the results.

Main activities

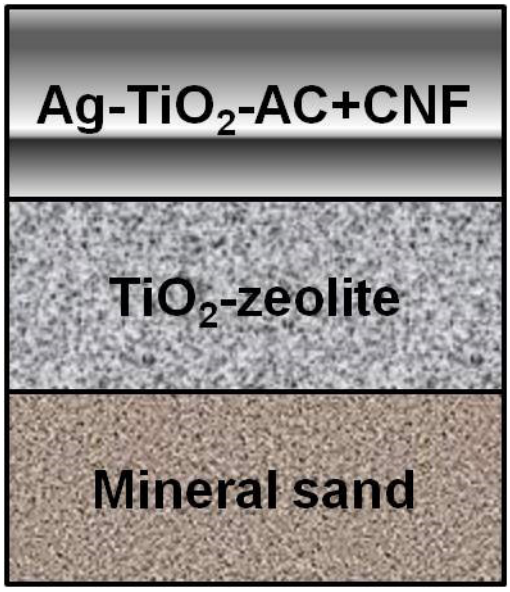


Project flow chart with work packages (WPs)

Results



Photocatalysis-assisted filtering unit



Layers of materials in filtering column

Applicability and transferability of the results

Drinking water and wastewater treatment plants

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Research Center

Research Center of Environmental Science and Engineering

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