PARTNER PRESENTATION AND INTEREST IN HORIZON EUROPE PARTICIPATION

Materials for Advanced Wastewater Treatment

Developing VIS-active photocatalytic thin films

Tertiary wastewater treatment for removal of traces (ppm range) of organic wastes in water:
- **process(es) activated by solar radiation**
- **Process(es) that don not leave toxic waste and do not use toxic reactants**

→ HETEROGENEUS PHOTOCATALYSIS

n-n tandem systems
TiO_2/SnO_2, Efficiency > 91%

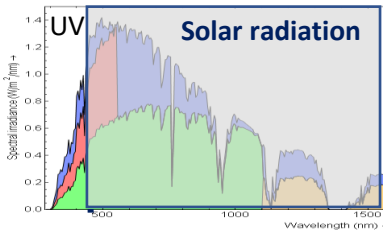
Enesca A., Isac L., Andronic L., Perniu D., Duta A., Appl. Cat. B, 2014, 147, 175 - 184

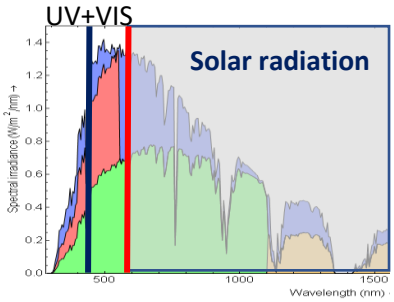
n-p diode type systems
TiO_2/Cu_2ZnSnS_4, Efficiency > 85%
Leaching!!!

Bogatu C., Covei M., Tismanar I., Perniu D., Duta A Advanced Nanostructures for Environmental Healtl Micro and Nano Technologies, 2020, 431-463.

$MetO_x$ matrix with C derivative filler
TiO_2/GO (rGO, g-C_3N_4)

Tismanar I., Obreja A.C., Buiu O., Duta A., Appl. Surf. Sci. 538, 2021, 147833





Thin film deposition
- Spray Pyrolysis and Cold Deposition equipment
- Sol-gel method: spraying the sol

Thin film characterization
- XRD, SEM, EDX, water CA, BET surface, UV-VIS-NIR spectroscopy, IR spectroscopy, AAS

Thin film testing
- Climatic chamber
- Continuous flow demonstrator photocatalytic reactors (for thin film and powder)

Short description of the *Renewable Energy Systems and Recycling* - our members:

Anca Duta, Cristina Bogatu, Dana Perniu, Maria Covei, Luminita Isac, Ioana Tismanar, Silvioara Gheorghita

Transilvania University of Brasov, Romania
Eroilor Bd., no. 29, Brasov, Romania

Contact details:
Name: Maria Covei
Email: maria.covei@unitbv.ro
Telephone: 0040726311063
Website: https://icdt.unitbv.ro/en/research-centres/renewable-energy-systems-and-recycling.html

Potential contribution/ main ideas:
- **Development of novel VIS/solar photocatalytic metallic oxides;**
- **Structural, morphological, optical, electrical, characterization of different novel materials, particularly metal oxides;**
- **Testing of novel photocatalytic materials at laboratory and demonstrator scale, home-made reactors.**

CESMIN
www.imt.ro/CESMIN

„CESMIN – Support Center for European cooperation in MIcro- Nanotechnologies (CESMIN)”, SMIS2014+ 107894
Project co-financed by the European Regional Development Fund through the Competitiveness Operational Program 2014-2020