

XENOKAT: DEVELOPMENT OF A BIOCATALYTICAL FILTER SYSTEM WORKING BASED ON CELLULAR METALIC MATERIALS FOR THE REMOVAL OF XENOBIOTICS

Xenobiotics are chemically synthesized compounds that do not occur in nature and thus are foreign to the biosphere. These are pharmaceuticals, dyes and other chemicals; most of them enter into environment through discharge of domestic sewage effluents with many ecologically effects.

The objective of the XenoKat project is to develop a filter technology with bio-functionalized metals for water treatment. Porous metallic hollow spheres and open celled metallic foams were successfully tested as carrier for the immobilization of enzymes.

The enzymes can be produced from white-rot fungi like *Trametes hirsuta*, thus immobilized enzymes are able to remove xenobiotics by biocatalysis after the classical sewage treatment plant.

Project management: TU Dresden, Bioprocess Engineering (INT) Group Enzym Technology, Project collaborators in XenoKat are the CIMTT at the TU Dresden, the Bundesanstalt für Gewässerkunde Koblenz, as well as the company ASA Spezialenzyme GmbH, Wolfenbüttel.

Projekt duration: 01.05.2017 - 30.04.2019

Further information: <http://xenokat.cimtt.de>



Figure 1 Metal Foam (10 ppi, stainless steel, Fraunhofer IFAM)

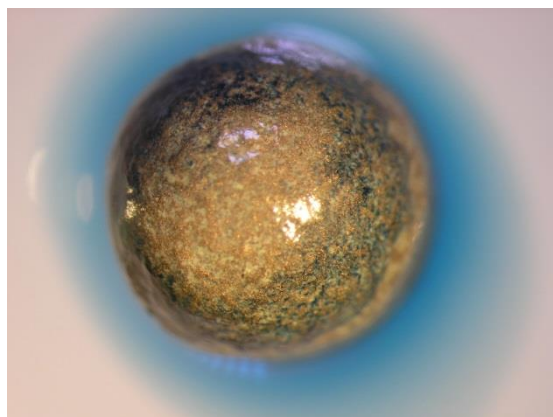


Figure 2 Metallic hollow sphere immobilised with Laccase from *Trametes hirsuta*. Product of laccase reaction is the blue colour around and on the sphere

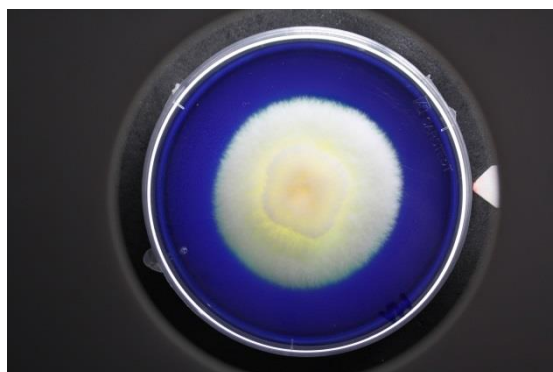


Figure 3 Agar plate with blue dye and *Trametes hirsuta*, to see is the decolorisation around and under the fungus.