

Research project

1. Title of the project	Manufacturing of photocatalytic Janus-Particles and testing their effectiveness	
2. Project partners/supervisors	Egypt	Germany
	Prof. Dr. Mohamed I. Badawy Dr. Tarek A. Gad-Allah Dr. Amer S. El-Kalliny (NRC)	Prof. Dr. Doru C. Lupascu (UDE)
3. Profile of the master student	Chemistry or Materials Science, synthesis experience is necessary!	
4. Duration of the project	5 months	
5. Work summary	In this master project the already existing knowledge on how to manufacture Janus particles of RuO ₂ and TiO ₂ will be further developed. Particularly the deposition of such particles onto stable supports is a major intention of the project. Under illumination by the standard sun, the photocatalytic activity will be tested and compared to different other small wavelength range light sources on standard Methyl orange. If the progress of the project permits, hormones and medications will be tested in the institute for analytical chemistry. The general goal is to generate cheap photocatalytic materials that will well work under simple sunlight illumination, an energy source largely available in Egypt.	
6. Funding and resources available to complete the project	<ul style="list-style-type: none"> • Photocatalytic activity testing setup. • All facilities for physico-chemical analysis of water/wastewater such TOC analyzer, UV/Vis spectrophotometer, gas chromatography equipped with mass spectrometer (GC/MS/MS) and High performance liquid chromatography. 	Equipment for synthesis and testing of the particles
7. General impact of the project	<ul style="list-style-type: none"> • If it works it can provide a new generation of photocatalytic systems that are efficient and cost-effective. • Transfer of know-how on fabrication of photocatalytic materials to Egyptian students. • Master student will acquire skills for the analysis of water samples; especially for POPs analysis. • Protection of the environment and health of the people. 	
8. Outlook of the project	Under the premise that our proposal to the European Union "Watpuri" is successful, we can extend the work on a 3 year basis with two PhD working in Essen and supporting other students coming in from Egypt. If not successful we will search for a smaller impact solution to the results. A publication should be achievable with the knowledge already existing and a hard working reliable student.	