

## Report of the Research Alumni Re-Invitation Grant

1st March- 31st March 2016

I have completed the alumni re-invitation research stay program, which has been funded by Alexander von Humboldt foundation on the 31<sup>th</sup> March 2016. The research program was conducted in Karlsruhe Institute of Technology (KIT) at Catalysis Institute for Research and Technology (IKFT), Karlsruhe, Germany, cooperatively with PD Dr. Silke Behrens and her research group.

A good progress has been made on the proposed plan which implied a study of the simultaneous Au and Pt doping for the laboratory scale synthesized mesoporous nano sized anatase TiO<sub>2</sub> particles relying on the sol gel methodology (wet chemistry).

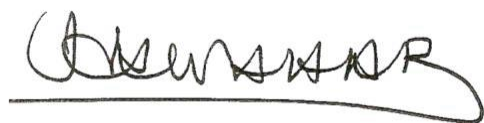
A quartz laboratory photolysis unit consisting of ultraviolet light source of 125 Watts medium pressure mercury lamp and coupled with a water jacket for cooling purpose was built in cooperation with the glass blowing workshop in IKFT. This source emits UV light in the wave length range 260-450 nm with maximum intensity at 365 nm.

The prepared anatase TiO<sub>2</sub> powder was employed for simultaneous Au and Pt metal doping via UV irradiation from 125 watt source for 4-5 hours illumination for various Au / Pt ratios aiming to reduce gold and platinum metal ions as dopants onto TiO<sub>2</sub> nano particles, for the study of synergistic or antisnergistic impacts on the photocatalytic degradation of organic moieties pollutants in water which is part of postgraduate studies program in the nanochemistry laboratory in Al-Nahrain University/ Baghdad.

All the Au / Pt doped nano TiO<sub>2</sub> specimen were analyzed using Inductively Coupled Plasma (ICP) emission spectrometry for the Au and Pt content measurements and Chemisorption Analyzer employing Brunauer, Emmett and Teller methodology (BET) for porosity and surface area measurements, where both facilities are located in IKFT.

Furthermore, I took part in the seminar research alumni "KIT in Innovation" for two days, 17-18 March, 2016 which was held jointly in the south and north campus of Karlsruhe Institute of Technology and organized by the International Scholars and Welcome Office (ISCO). The workshop encompassed many presentations on several topics including innovation and patents, and also visits to some KIT facilities.

For the continuation of the scientific cooperation on the postgraduate study level, the research partner PD Dr. Silke Behrens has evidently welcomed the approach. We will continue to collaborate on research projects, which is in my opinion a high praise for the efforts made during this short research stay.



Prof. Dr. Hilal S Wahab  
Department of Chemistry  
College of Science  
Al-Nahrain University  
Al-Jadriyah/Baghdad / Iraq