

## IPID4all Exchange

### Report for Senior Research Visit

<b>Host researcher:</b>	Dr. Cynthia Friend, Professor
<b>Host university and department</b>	Harvard University, Department of Chemistry and Chemical Biology
<b>Visiting researcher:</b>	Dr. Katharina Al-Shamery, Professor
<b>Exchange dates:</b>	1 <sup>st</sup> July 2016-8 <sup>th</sup> July 2016
<b>Sending university and department</b>	Carl von Ossietzky University Oldenburg Faculty V Institute for Chemistry

Al-Shamery participated in the Summer Fellowship Program of the Radcliffe Institute for Advanced Studies of the Harvard University. The fellowship program is a competitive follow up program for all former Radcliffe fellows who are senior scientists and artists from all over the world. Al-Shamery was eligible for this program as she had been elected as a fellow in 2008 belonging to the 3% selected of all applications.

During her 4 weeks stay Al-Shamery took the opportunity to visit the group of the physical chemist Professor Dr. Cynthia Friends at the Harvard University. Friend heads a DOE international Energy Frontier Research Center for Sustainable Chemical production at Harvard which is comparable to a German Center of Excellency. Al-Shamery has discussed with Friend details of a possible research stay of Al-Shamery's coworker, the MSc student Lars Mohrhussen who will start his PhD in Al-Shamery's group beginning of next year. The plans are that he will be incorporated into UHV based surface science research work on model catalysis of organic molecules at well ordered iron oxides. Furthermore Al-Shamery and Friend have decided to publish two joint papers on chemistry at titania surfaces as they have matching research interests and have found complementary results which they want to jointly present and discuss in the mentioned papers. In the first paper Al-Shamery will contribute work on methanol chemistry at TiO<sub>2</sub>(110) single crystal surfaces while Friend has interesting results on methanol chemistry under ambient conditions at titania nano tubes. A second paper will focus on the role of bulk defects in titania on the catalytic properties combining surface science studies of both groups.

Al-Shamery took the opportunity to present her research by giving a seminar talk to the Energy Frontier Research Center for Sustainable Chemical production at Harvard which was broadcasted live to further members in California and at the Fritz Haber Institute of the Max Planck Society in Berlin. Furthermore she could connect with local members of the consortium: the chemical engineer Professor Dr. Maria Flytzani-Stephanopoulos and the surface scientist and expert in scanning tunneling microscopy Professor Dr. Charlie Sykes, both from Tufts University. Al-Shamery could present her research also as a seminar talk at the Tufts. The discussions were very lively. As a consequence the researchers seek possible long term cooperations. Flytzani-Stephanopoulos suggested a possible project which will be followed up in Oldenburg concerning the role of isolated metal atoms in heterogeneous catalysis at oxidic surfaces. This may develop into a further exchange of a second PhD student.

Al-Shamery lived at the Rowland Institute of Harvard University, a building containing research labs as well as a few guest apartments. Therefore she had the excellent opportunity to talk to Rowland fellows about their research. She had a particularly life exchange with a group working on CO<sub>2</sub> reduction.

Al-Shamery gave a presentation on her research in a lunch talk to other members of the Radcliffe fellow program. As a further activity at the Radcliffe institute she participated in an interdisciplinary work shop on "How to Prevent Terrorism by Steering Youth Away from Violent Extremism". As a follow up she wants to organize an interdisciplinary seminar for all interested students at the Carl von Ossietzky University Oldenburg together with Professor Martin Butler (Faculty III) with participants of the Radcliffe workshop.