My research stays at The Institute for Chemical Research, Kyoto University.
6th June – 8th July, 2012.

Jaime Mateos Gil, PhD student at the Organic Molecular Materials Group of Prof. Nazario Martín, Organic Chemistry Department, Complutense University of Madrid, Spain.

I spent one month at the Institute for Chemical Research, Kyoto University in Prof. Murata's research group learning how to synthesize the endohedral fullerene $H_2O@C_{60}$. The objective of learning how to prepare this material is to carry out some catalysis experiments over it at our laboratory in Spain.

During this month I followed a synthetic pathway based on the "molecular surgery" to open the cage, insert the water molecule by a high pressure experiment and finally close the fullerene C_{60} cage. The followed strategy was previously published by Prof. Murata's Group.

All the experiments developed during this stay, allowed me to get new different skills and techniques in chemistry that were unknown or inexperienced for me. I carried out some photochemical oxidations and high pressure experiments and the detailed study of each reaction provides me new concepts, especially about the electrociclics reactions involved in the opening and closing of the cage.

Moreover, meanwhile I was carrying out the synthesis of $H_2O@C_{60}$, I tried several different methods of synthesis of pyridazines, the key molecule for the opening of the fullerene cage. I improved my experience in HPLC, medium pressure chromatography and handing fullerene derivatives, something that I was previously skilled but in a different kind of chemistry, what allowed me to get a new perspective and advices and tips for future works.

I would like to thank to Prof. Murata and the Institute for Chemical Research for the opportunity of working here and improve my knowledge and experience, and for all the help in supporting my stay in Kyoto. And I would like to express special thanks to all member at Prof. Murata group for all the help and collaboration to make easier my adaptation to the group and enjoy this wonderful month in Kyoto

Handing the High-Pressure reactor (left) and preparing and solid phase thermal reaction at vacuum in a muffle.