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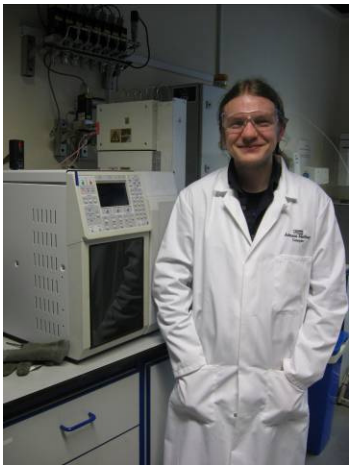

Sam Wilkinson graduated with an MEng degree in Chemical Engineering in 2009, from the University of Birmingham. During his undergraduate degree he also worked as a summer intern at the Proctor and Gamble Technical Centre in Newcastle in 2008.

In October 2009 he commenced his EngD with Johnson Matthey. He is supervised academically by Dr. Mark Simmons and Dr. Phil Robbins and industrially by Dr. Mike Watson.

Eng D Project Background

Catalyst lifetimes in many industrial processes are typically measured in years, although they can be significantly shorter. Laboratory studies have shown that, for many systems, significant changes in catalyst performance occur in the first hours of use until a quasi-steady state operation is reached. The changes can be positive (for example, a reduction in by-product levels) but are more usually negative (typically a loss in catalyst activity).

An increased fundamental understanding of the impact of product formulation on the kinetics and processes occurring at this stage in the catalyst life cycle provides significant opportunities for improved catalysts and processes.

The project aims to develop our fundamental understanding of the changes occurring at this critical stage in the life cycle of a catalyst and how catalyst preparation impacts on the formation of active sites in the catalyst. The project will develop models to link this to structural and chemical changes in the catalyst. Selection and development of appropriate tools to meet these aims will be gained during the investigation.

The resultant learning will be used to predict how modifications to catalyst structure and formulation can positively impact on catalyst performance.

The project focuses on catalyst systems chosen from areas such as selective oxidation, methanol synthesis, dehydrogenation and hydrogenation.