



# グローバル COE 物質科学イノベーション講演会

演 題 : **The role of Mo in Selective Methanol Oxidation Catalysis**

講 師 : **Prof. Michael Bowker**

*Wolfson Nanoscience Laboratory and Cardiff Catalysis Institute*

*School of Chemistry, Cardiff University, Wales, UK.*

email: [bowkerm@cf.ac.uk](mailto:bowkerm@cf.ac.uk)

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場 所 : 創成科学研究棟 5 階大講堂

共 催 : 触媒化学研究センター、【後援】日本学術振興会 (JSPS)

要 旨 :

The role of Mo in the selective oxidation reactions will be considered in some detail, focusing on the selective oxidation of methanol to formaldehyde. The reaction mechanism and kinetics will be described. It is notable that Mo tends to segregate to the surface of iron molybdate catalysts, proven by scanning transmission electron microscopy and XPS, and so it dominates the surface, even at very low loadings. This is manifest in reaction data too: for instance, the selectivity to formaldehyde for a catalyst with only 20% Mo present is 50% at 50% conversion, whereas for pure iron oxide it is close to zero at all conversions. The reaction is shown to proceed through two main surface intermediates, namely, the methoxy (the selective intermediate) and the formate (non-selective intermediate). The formate is easily produced on iron oxide catalysts, whereas Mo has great difficulty proceeding to that stage, hence its excellent selectivity performance.

I will describe our results for this system in some detail, together with our recent attempts to make model single crystal oxides of this kind for surface science studies. I will link these data to the important catalytic concept of the “active site”.

連絡先 : 触媒化学研究センター朝倉清高 ( 内線 : 9113 ) [askr@cat.hokudai.ac.jp](mailto:askr@cat.hokudai.ac.jp)

