Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

The Role of Cluster Size and Composition, the Nature of the Support / Interface on the Performance of gas Phase Heterogeneous Catalysts and Electrocatalysts STEFAN VAJDA, Argonne National Laboratory — In this paper, we will discuss the catalytic performance of with atomic precision size- and composition selected supported clusters consisting of a handful to several dozen atoms in 1) gas phase reactions of selective C=C bond activation, C-H bond breaking and CO oxidation; and 2) under electrochemical reactions, such as water splitting. Catalysts' performance will be evaluated as function of cluster size and composition, while the chemistry of the support material / interface will be used to fine-tune catalytic activity and selectivity. In situ X-ray techniques are used to monitor the size, shape and oxidation state of the catalyst under reaction conditions. As time will allow, results will be presented on the use of additives/modifiers which allow controlling the nature of the catalytic site under reaction conditions, and accordingly, its activity and selectivity.

Stefan Vajda
Argonne National Laboratory & Yale University

Date submitted: 15 Nov 2013 Electronic form version 1.4