

Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Identifying surface intermediates with TPD: Methylchlorosilanes on Cu(001) JAMES LALLO, EVERETT LEE, B.J. HINCH, Rutgers University, DAN STRONGIN, Temple University — Various methylchlorosilane molecules ($\text{SiH}_x \text{Me}_y \text{Cl}_z$, $x+y+z=4$) were exposed to a Cu(001) surface. Dissociative adsorption was observed for several hydrogen containing species, at surface temperatures above 160K. The chemistry and thermal stability of the surface bound fragments were then studied as a means for understanding intermediates of the commercially important “Direct Process,” namely production of $\text{Cl}_2(\text{CH}_3)_2\text{Si}$, from Si and CH_3Cl , with a Cu catalyst. Temperature programmed desorption indicates that methyl groups are readily transferred between absorbed Si-containing species. A large fraction of Cl remains on the surface after observation of typically 2 or 3 distinct TPD features below 450K. By a comparison of the product species distributions to the parent species, we are then able to propose key intermediates common to many of the adsorption/desorption mechanisms.

James Lallo
Rutgers University

Date submitted: 21 Nov 2008

Electronic form version 1.4