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Heterogeneous Reactions on Aluminum Oxide Surfaces Modeling Rocket Exhaust Particles

Authors: [Steven M. George](#); [COLORADO UNIV AT BOULDER DEPT OF CHEMISTRY AND BIOCHEMISTRY](#)

Abstract: This research was performed by a graduate student, and post-doctoral research fellow. Our studies for the hydroxylation and dehydroxylation of α -Al₂O₃ (001) led to two publications. The adsorption of H₂O on α -Al₂O₃ (001) was accepted and published in the Journal of Physical Chemistry. The desorption of H₂O from α -Al₂O₃ (001) was accepted and published in Surface Science. The study of HCl adsorption and desorption from α -Al₂O₃ (001) led to one publication in Surface Science. In addition, the study of HCl and H₂O adsorption on α -Al₂O₃ (001) and the displacement of Al-OH surface species by HCl and displacement of Al-Cl surface species by H₂O led to one additional manuscript that is still under review. Since the conclusion of this research grant, we have continued to examine the surface chemistry of amorphous Al₂O₃ surfaces. **Oxide** surface chemistry is still a largely unexplored area. Our surface reactivity studies have helped to define this new territory in surface science. These studies have also improved our understanding of heterogeneous reactions on **aluminum oxide** rocket exhaust particles in the atmosphere.

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