

MAR12-2011-000295

Abstract for an Invited Paper  
for the MAR12 Meeting of  
the American Physical Society

### **Heterogeneous Photochemistry and Optical Properties of Mineral Dust Aerosol**

VICKI GRASSIAN, University of Iowa

It is now widely recognized that heterogeneous reactions of mineral dust aerosol with trace atmospheric gases impact the chemical balance of the atmosphere and the physicochemical properties of these particles. Field studies using single particle analysis, have now shown that the chemistry is mineralogy specific and follows the trends expected from laboratory studies. These laboratory studies, which were initiated over a decade ago, have focused on the nighttime chemistry of mineral dust aerosol which is really only “half” the story. This talk will focus on two aspects of solar light interaction with mineral dust aerosol. First, the heterogeneous photochemistry of adsorbed chromophores (e.g. nitrate ion) and light absorbing components of mineral dust (iron oxides and titanium dioxide) is discussed. These heterogeneous photochemical reactions are poorly understood and laboratory studies to better quantify these reactions in order to determine the impact on the chemical balance of the atmosphere are needed, as will be discussed. Second, the optical properties of mineral dust aerosol measured by extinction infrared spectroscopy and visible light scattering show that shape effects are extremely important for mineral dust aerosol.