APPENDIX: Examples of Abstracts

One or two sentences providing background on the problem.

Two or three sentences summarizing the methodology and results.

A concluding sentence highlighting the significance of the study.

Nitrogen oxides, including nitrogen dioxide and nitric acid, react with mineral dust particles in the atmosphere to yield adsorbed nitrate. Although nitrate ion is a well-known chromophore in natural waters, little is known about the surface photochemistry of nitrate adsorbed on mineral particles. In this study, nitrate adsorbed on aluminum oxide, a model system for mineral dust aerosol, is irradiated with broadband light ($\lambda > 300$ nm) as a function of relative humidity (RH) in the presence of molecular oxygen. Upon irradiation, the nitrate ion readily undergoes photolysis to yield nitrogen-containing gas-phase products including NO_2, NO, and N_2O, with NO being the major product. The relative ratio and product yields of these gas-phase products change with RH, with N_2O production being highest at the higher relative humidities. Furthermore, an efficient dark reaction readily converts the major NO product into NO2 during post-irradiation. Photochemical processes on mineral dust aerosol surfaces have the potential to impact the chemical balance of the atmosphere, yet little is known about these processes. In this study, the impact that adsorbed nitrate photochemistry may have on the renoxification of the atmosphere is discussed. (*J. Phys. Chem. A* **2009,** *113,* 7818–7825).

Polymer-fullerene bilayer heterostructures are suited to study excitonic processes in conjugated polymers. Excitons are efficiently quenched at the polymer-fullerene interface, whereas the polymer-vacuum interface is often considered as an exciton-reflecting interface. Here, we report about efficient exciton quenching close to the polymer-vacuum interface of spin-coated MDMO-PPV (poly[2-methoxy-5-(2′-ethyl-hexyloxy)-*p*-phenylenevinylene]) films. The quenching efficiency is estimated to be as high as that of the polymer-fullerene interface. This efficient quenching is consistent with enhanced intermolecular interactions close to the polymer-vacuum interface due to the formation of a “skin layer” during the spin-coating procedure. In the skin layer, the polymer density is higher; that is, the intermolecular distances are shorter than in the rest of the film. The effect of exciton quenching at the polymer-vacuum interface should be taken into account when the thickness of the polymer film is on the order of the exciton diffusion length; in particular, in the determination of the exciton diffusion length. (*J. Phys. Chem. B* **2009,** *113,* 9104–9109).

Nanostructured metallic architectures have unique and highly attractive properties, including large optical field enhancements resulting in strong light scattering and absorption. Modification of prefabricated nanostructures by simple galvanic displacement (GD) allows for the design of new nanomaterials with enhanced optical properties. In this paper, we have studied the optical properties of two families of Ag fractals before and after GD in a Au(III) solution. The new nanomaterials showed significantly improved optical enhancing properties that allowed for straightforward and highly reproducible single-molecule detection by surface-enhanced resonance Raman scattering (SERRS). (*J. Phys. Chem. C* **2009,** *113,* 12897–12900).