Super-stabilizing Groups in Aryl Nitrene Chemistry

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Aryl nitrenes are highly reactive intermediates that contain nitrogen atoms with only six valence electrons, and whose reactivity is dictated by their electronic states. Most aryl nitrenes undergo reactions at room temperature that are consistent with singlet state chemistry, even though this is not the lowest electronic state. However, a small number of nitrenes, including those derived from pyridine and quinoline N-oxides, exhibit room temperature reactions that are consistent with ***triplet*** state chemistry. This unusual behavior allows us to probe reactivity that is not typically accessible to us under normal circumstances using a combination of spectroscopic, kinetic and computational techniques.

• **Thursday, October 12th @ 3:30 PM in CP 253** •

Water Formation and Destruction by "Super" X-ray Flares from a T-Tauri Star

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This talk will discuss time variable chemical and physical processes of H_2O within a protoplanetary disk in the presence of 'super' X-ray flares emitted by a T-Tauri (young, Sun like) star. Change in H_2O abundance was monitored at radial distances 1 to 20 AU from the star from the mid-plane to the disk surface. The dominant processes contributing to change in H_2O abundance were found to be dissociative recombination of H_3O^+, H_2O adsorption onto grain, and photolysis of H_2O. We found that X-rays typically have short-term affects on both gaseous and ice H_2O abundances.