Novel N-Heterocyclic Carbenes and their Corresponding Homo- and Heterometallic Complexes Daniela Tapu, Kennesaw State University, Georgia



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Our project targets a class of N-heterocyclic carbene ligands that are tagged with fluorescent moieties. We designed our carbenes as supports for mono- and bimetallic complexes. Interest in the development of new carbenes and their corresponding transition metal complexes has arisen due to their potential application in catalysis as fluorescent probes for a variety of catalytic reactions. By attaching florescent tags to the catalyst, the reaction could be monitored by a fluorescence spectrometer.

A series of functionalized imidazolium salts that are tagged with fluorescent moieties were synthesized and characterized. (Figures 1 and 2)

Our investigations on their reactivity indicate that the corresponding rhodium(I) and iridium(I) complexes can be easily generated by *in situ* deprotonation with potassium *tert*-butoxide in the presence of $[M(COD)CI]_2$ (M = Rh, Ir)







Figure 2. 10⁻⁵ molar solutions of three imidazolium salts under UV light

Preliminary studies on the fluorescence emission of these new metal complexes show that the rhodium complexes also display fluorescence emission.



