YSU Chemistry Seminar Series 2017-2018

Upcoming Seminar

Friday: 2/16/2018 3PM

Room 3022 Ward Beecher Hall

Refreshments Provided

Photoactivated Metal Complexes with Multifunctional Therapeutic Potential

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The rich and tunable reactivity of Ru(II) and Mn(I) complexes with visible light offers exciting opportunities for the development of less invasive and more localized treatment of cancer and other diseases. Compounds that only react with biomolecules under low energy visible light exposure while remaining unreactive in the dark provide spatial and temporal control over activity, thus localizing cell death to tumors and minimizing the impact on healthy cells. We currently design, synthesize, and study the photochemistry of new metal complexes that are activated with visible light to unleash more than one therapeutic effect in an effort to enhance the cytotoxicity. The controlled release of CO, in which visible light absorption by a metal-CO complex can cause bond breakage between the metal ion and CO, is of great interest due to its cytotoxicity at high concentrations. The combination of CO release with the sensitized production of singlet oxygen is currently under investigation. The new molecular architectures will provide a useful method for probing the synergistic activity of CO with other therapeutic agents. The design considerations and preparation of new multifunctional metal complexes and the analysis of their photochemical reactivity through electronic absorption, steady-state emission, and IR spectroscopy will be presented.