



Ana de Bettencourt Dias

Associate Vice President of Research
University of Nevada, Reno

WHEN October 10, 2018

WHERE Widtsoe Hall 330

TIME Refreshments 3:45pm
4:00pm -5:00pm

Host: Lisa Berreau

Luminescent lanthanide complexes with dual activity

Abstract: The luminescence of lanthanide ions is based on $f-f$ transitions. Due to the core nature of the $4f$ orbitals involved in the process, as well as the forbidden nature of these transitions, the emission properties make these ions uniquely suited for a variety of applications involving light emission, such as lighting, imaging, and sensing. Since the $f-f$ transitions are forbidden, the emission is most efficiently promoted through coordinated chromophores. The use of these coordinated ligands provides unique opportunities. They can be functionalized to tailor the chemical and photophysical properties of the resulting complexes.¹ We have used this approach to synthesize complexes that can be used as imaging agents for cancer cells.² By extending the conjugation of the ligand we shifted the excitation wavelengths into the visible and isolated complexes that can be used as molecular nanothermometers.³ In addition, we used carbazole-based ligands that enabled excitation of the resulting complexes in the biological window by a two-photon process. Finally, we used oligothiophene-based ligands to isolate complexes that luminesce and can generate singlet oxygen. In this presentation, I will discuss my group's recent work on lanthanide ion complexes with dual activity.

