



# Department of Chemistry

**University of Central Florida**  
Department of Chemistry Seminar Series – Fall Semester 2023  
Monday, October 23<sup>rd</sup>, 9:00 AM, Location CB2 105

## **Access to Functional Arylalkoxysilanes by Rh-catalyzed Intermolecular C–H silylation**



**Salina Som**

Adviser: Dr. Kangsang Lee

Arylalkoxysilanes are considered important monomers due to their ability to act as fundamental building blocks for high-value polymer materials. Transition metal-catalyzed C–H silylation offers a straightforward route to arylalkoxysilanes that is atom- and step-economical. In our initial study, we disclose the first protocol for the direct intermolecular C–H silylations of unactivated arenes and heteroarenes with  $\text{HMe}_2\text{SiOEt}$ . The silylations are catalyzed by a Rh-complex (0.5 mol %) derived from commercially available  $[\text{Rh}(\text{coe})_2\text{Cl}]_2$  and (*S,S*)-Ph-BPE in the presence of cyclohexene at 100 °C, furnishing the desired aryloxydimethylsilanes up to 99% yield. The regioselectivity is mainly affected by the steric bulk of the substituents in arenes and by electronic effects as an ancillary factor. Preliminary results show that the current protocol can be extended to double C–H silylations affording bis-silylated arenes up to 98% yield and is further applicable to the silylation of  $\text{HMeSi}(\text{OEt})_2$  to deliver the corresponding aryldiethoxymethylsilanes. In our recent study, we have developed a method for intermolecular C–H silylations of heteroarenes with  $\text{HSi}(\text{OEt})_3$  from a Rh-complex (1 mol %) derived from  $[\text{Rh}(\text{coe})_2\text{Cl}]_2$  and (*S*)-DTBM-MeO-BIPHEP in the presence of cyclohexene in THF at 90 °C, yielding the desired heteroaryltrioxydimethylsilanes up to 98% yield. These silylation products are highly useful and can be readily utilized as monomers in silicone material synthesis.