We present a mild method for regioselective allylic sulfonylation of vinyl ethylene carbonate using [Bu4N][Fe2(SR)2(NO)4]. This active species can be prepared in situ starting from the readily available Fe2(SR)2(NO)4, potassium hydride, and Bu4NBr. This protocol allows for the coupling of a wide substrate range. Electron-poor and -rich aromatic as well as some aliphatic thiols can be used in the presence of 5 mol% iron-complex to form new C-S bond with good regioselectivity and features good Z-selectivity at room temperature. Furthermore, we introduce the concept of chiral ion pairing catalysis into the iron nitrosyl complex. We find a new strategy to produce chiral allenes through asymmetric decarboxylative isomerization of cyclic alkynal carbonates catalyzed by an iron nitrosyl-chiral bisguanidinium ion pairs. This is the first example about asymmetric allene formation catalyzed by an iron catalyst without any chiral ligands while through asymmetric ion-pairing catalysis.

Date: 23 March 2018 (Friday)  
Time: 2pm  
Venue: Conference Room, Research & Graduate Studies Office, Level 2, SPMS  
Supervisor: Prof Tan Choon Hong