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Title: **Diruthenium σ-*gem*-DEE Compounds: Novel Scaffolds of Carbon Rich Organometallics**
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Abstract. Linear polyyn-diyls (-(C≡C)$_n$-) or polyen-diyls (-(C=C)$_n$-) capped by two σ-bonded metal units ([M]), are very attractive prototypes of "organometallic molecular wires", and have been studied by many groups around the world. Recently our group has become interested in bridges of mixed acetylene and ethene units, such as *E*-DEE (DEE = diethynylethene) and *gem*-DEE. The latter is particularly interesting because of its *cross-conjugated* nature. Diederich and Tykwinski have perfected the art of making *gem*-DEE and have reported interesting opto-electronic properties of *gem*-DEE-based materials. Ratner has also postulated conductance switching in molecular wires constructed from *gem*-DEE. Other than the report of Pt(II) compounds, the metallation chemistry of *gem*-DEE is unknown. Our exploration of *gem*-DEE chemistry focuses on (A) *trans*-$Ru_2(DMBA)_4$(*gem*-DEE)$_2$ (DMBA is *N,N'*-dimethylbenzamidinate), which is diamagnetic and may function as the starting point of oligomers; and (B) $[Ru_2(ap)_4]_2$(m-*gem*-DEE) (*ap* is 2-anilinopyridinate), where the rich redox characteristics of the $Ru_2(ap)_4$ unit allows for assessing the capacity of *gem*-DEE in mediating electron/hole transfer.