Abstract Title: New Diruthenium(II,III) Compounds with Reactive Terminals

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Well-defined organic layers deposited on top of metal or semiconductor surfaces are currently being investigated for their potential technological applications in hybrid CMOS-molecule devices. Understanding electron transport and charge storage is extremely important in order to advance the process of engineering molecules for specific applications. This poster presents the preparation and structural studies of the following compounds: $Ru_2(DmAniF)_3(\mu\text{-}O_2C(CH_2)_mCH{=}CH_2)Cl$ (**1**) (m = 3, **a**; 8**, b**), $Ru_2(DmAniF)_2(\mu\text{-}O_2C(CH_2)_mCH{=}CH_2)_2Cl$ (**2**) (m = 3, **a**; 8**, b**), and $Ru_2(D(3,5\text{-}Cl_2Ph)F)_3(\mu\text{-}O_2C(CH_2)_mCH{=}CH_2)Cl$ (n=8 (**3**)), where (D(3,5-Cl_2Ph)F) is N,N'-bis(3,5-dichlorophenyl)formamidinate and DmAniF is N,N'-di(m-methoxyphenyl)formamidinate. Compounds **2a** and **2b** underwent olefin cross metathesis reactions catalyzed by $(Cy_3P)_2Cl_2Ru(=CHPh)$ to afford the intramolecularly ring-closed derivatives $Ru_2(DmAniF)_2(\mu\text{-}O_2C(CH_2)_mCH{=})_2Cl$ (**4**) (m = 3, **a**; 8**, b**).

These diruthenium species are of interest due to their rich redox characteristics, net molecular spin and possession of one or two terminal olefin groups. Future goals of this project include modification of hydrogen terminated silicon surface (Si-H) with these diruthenium species under photo-, thermo- or microwave conditions, and fabrication of the metal-molecule-silicon devices.