Showcasing research from Professor Emslie’s laboratory, Department of Chemistry, McMaster University, Hamilton, Ontario, Canada.

Interconversion and reactivity of manganese silyl, silylene, and silene complexes

This work involves the reaction of a monosubstituted manganese silylene complex (L_xHMn=SiHR) with ethylene to afford the first transition metal silene complex with an SiH substituent (L_xHMn(RHSi=CHMe)), unprecedented isomerization to a silylene isomer (L_xHMn=SiEtR), and further reaction with ethylene to afford a new silene complex (L_xHMn(REtSi=CHMe)). Reaction mechanisms were elucidated through reactions with C_2D_4, and we report the involvement of the aforementioned silene complexes in catalytic ethylene hydrosilylation. The image shows Mn atoms traversing 4 mountain peaks representing the stepwise silylene → silene → silylene → silene transformations in the research.

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