

# Asymmetric Halogen-Metal Exchange (AHME) of Geminal Dihalides with Planar Chiral Organometallic Reagents

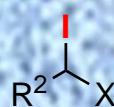
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Our goal was to realize an AHME process using a recyclable planar chiral iodoferrocene reagent. Addition of putative scalemic lithium carbenoid reagents generated via the illustrated AHME cycle to aldehydes resulted in no enantioselectivity. It is suspected that the ate-complex intermediate reacted directly with the aldehyde. Further experiments are in progress to verify this hypothesis.

- optimal syntheses of silyl and alkyl substituted dihalides have been developed

- ferrocenyl lithium incorporates iodine from diiodides (or chloroiodides), and returns to starting state without racemization

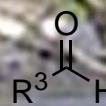
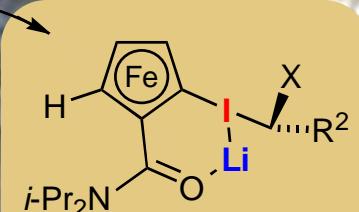
- Li/I exchange from iodoferrocene is readily achieved with standard alkylolithium reagents



$\text{X} = \text{I}$  prochiral diiodomethane derivative  
 $\text{X} = \text{Cl}$  racemic chiral chloroiodomethane derivative



AHME  
cycle



- ate-complex reacts directly with aldehyde; SET character of addition precludes enantioselectivity?

- 0% ee for a range of aldehydes

