PART I: LEWIS ACIDS CATALYZED CYCLIZATION OF α-SUBSTITUTED 
α-CHLOROMETHYL PHENYL SULFONES

PART II: REACTIONS OF TRICARBONYLCYCLOHEXADIENYLIRON SALTS 
WITH NUCLEOPHILES

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ABSTRACT

PART I

The reaction of α-chloromethyl phenyl sulfone with Lewis acids gave cyclized products in moderate to low yields. Several Lewis acids i.e. AlCl₃, SnCl₄, TiCl₄ and a mixture of Et₂AlCl and AlCl₃ were employed in the investigations. Solvents used were CH₂Cl₂, ether, nitromethane and a mixture of CH₂Cl₂ and ether. It appeared that suitable reaction conditions were AlCl₃ (3 equiv.) in CH₂Cl₂ at 0°C and RT. The cyclized products were appeared to be unstable under reaction conditions. This could be the major contributing factor to low yield of the reaction. The results represent a very few examples on the Lewis acids catalyzed cyclization of sulfones.
ABSTRACT

PART II

Reactions of lithio α-halomethyl sulfoxides and sulfones with tricarbonyl-1-methoxycarbonylcyclohexadienyliron hexafluorophosphate salt A utilizing the inverse addition technique were investigated.

The lithio α,α-dichloromethyl phenyl sulfoxide and lithio α-chloromethyl phenyl sulfone reacted well with the salt to give the expected adducts B, C respectively in moderate yields.

The reactions of lithio α-chloromethyl phenyl sulfoxide and lithio α-fluoromethyl phenyl sulfoxide with salt A gave the adducts D and E in low yields. Both adducts appeared unstable. The variations of