Zhou Group Machanism Problems-20160108

**Problem -001**



*Ref: J. Am. Chem. Soc.*2004,126, 8569

*Org. Lett.* 2004, 6, 3329.

*Chem. Soc. Rev.* 2009. 38, 3133.

**Problem -002**

**Pentalenene, whose isolation from Streptomyces griseochromogeneswas reported by Seto and Yonehara in 1980, is the parent hydrocarbon of the pentalenone antibiotic familyof fungal metabolites. Since the first de novo approach to pentalenenereported by Paquette, L. A. group in 1982, almost 30 total and formal syntheses of Pentalenene have been defined.**

**In 2002, they describe the firstsuccessful undertaking the so-called “squarate ester cascade”that transforms diisopropyl squarate in an equally conv****enient and concise manner into thealternative angularly fused architecture.**



Ref: Org. Lett. 2002, 4, 4547.

Hint: 6 steps in one pot, twice electrocyclization.

**Problem -003**

**The plant genus Aglaia is the source of a unique group of denselyfunctionalized natural products – The rocaglamides. As proposed that the rocaglamides may be biosynthetically derived fromreaction of 3-hydroxyflavone with cinnamide derivativesto afford the aglain core.**

**And then it may be converted to dehydrorocaglate by XXXXX rearrangement. And XXXXX rearrangements havebeen conducted using acidic or basic conditions or employing metalcatalysis and have been used with success in a number of naturalproduct syntheses.**



*Ref: J. Am. Chem. Soc.*2004,126, 13620

Hint: 1 step only.