**CHEM 303 REPORT**

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**Section**:3 (Thursday)

**1.Reaction Scheme**



**2.Table of Reactants and Reagents**

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| **Reagents/Reactants** | **Mol/mmol** | **Mwt**  **(g/mol)** | **Mass**  **(g or mg)** | **equivalence** | **Volume** | **Density** |
| Maleic Anhydride | 5 mmol | 95.06 g/mol | 0.5 g | 1 |  |  |
| Furan | 14 mmol | 68.07 g/mol |  | 2.8 | 1.0 mL | 0.9731 g/mL |
| Toluene |  |  |  |  |  |  |

**3.Reaction Mechanism**

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**4.Reaction Procedure**

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| **1**.) Adding 1 equivalent maleic anhydride and 2.8 equivalent furan Erlenmeyer flask**.** |

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| **2.)** Stopper the flask loosely with a cork and swirl gently with magnetic stirrer until the maleic anhydride goes solution. |

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| **3.)** Keep the stopper until observe the evaporation of furan. Remain at room temperature for 1 hour. |

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| **4.)** Add the toluene to the solution then for the cooling of solution put the ice bath for 10 minutes. |

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| **5.)** Using for gravitational filtration for collecting the precipitate on filter washed with toluene**.** |

**4.Reaction Procedure**

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| **6.)** For recrystallizing of the solid, dissolve with the chloroform (minimum amount) at 45.Then add the petroleum ether, until the solution becomes cloudy. |

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| **7.)** The product is dried**.** |

**5)QUESTIONS**

**1)Write the reaction mechanism of cyclopentadiene with the methyl ester of fumaric acid and indicate the stereochemistry of the product.**



**2)Explain inverse Diels-Alder reaction**.

Inv. Electron demand Diels-Alder reaction is cycle addition between an electron rich dienophile (like FA methyl ester) and electron poor diene (like cyclopentadiene). During the reaction,bonds of diene and dienophile are broken and two new bonds and are sigma bonds and one π bond formed. Inv. Diels-Alder reactions often involve hetero atoms and can be used to form heterocyclic compounds.



Diene Dienophile heterocyclic in DA product

**7)References**

**1)**  [Z.M.Png](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Png%2C+Zhuang+Mao), [H.Zeng](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Zeng%2C+Huining),[Dr Q. Ye](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Ye%2C+Qun) & [Dr.J.Xu](https://onlinelibrary.wiley.com/action/doSearch?ContribAuthorRaw=Xu%2C+Jianwei) ***Inverse-Electron-Demand Diels–Alder Reactions: Principles and Applications.*** 12 May 2017.

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