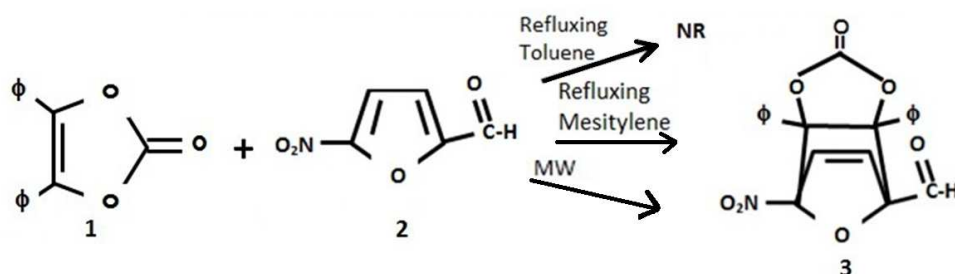


Progress Toward the Synthesis of Novel Heterocyclic Compounds Via Diels-Alder Reactions, Including Microwave Promotion

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This project involves “inverse-electron-demand” (IED) Diels-Alder (DA) reactions, microwave promotion (versus conventional heating), and retro-Diels-Alder (RDA) reactions. Concerning IED, we tried to figure out how electron-poor a diene would need to be, in order to require an electron-rich dienophile. Just a few examples of the many reactions done by ONU Honors Program undergraduate research student, Kristen Richey, are summarized below. MW refers to the use of our Biotage microwave instrument, “Initiator” model. **By the time this abstract was written, none of the product structures had been rigorously proven.** 4,5-diphenyl-1,3-dioxol-2-one **1** was reacted with 5-nitro-2-furaldehyde **2**. The nitro and formyl groups should provide enough IED electron deficiency, and **1** should be electron-rich enough. No reaction was observed in toluene, but in mesitylene, TLC analysis showed a single product, expectedly **3**, but both reactants were present, suggesting an incomplete reaction and/or RDA.



Several other combination of reactants were tried, in refluxing solvents of various boiling points, but with similar results. Therefore, microwave heating was tried, including several combinations of reactants, including **1** and **2**, and with several different sets of MW conditions, but all such attempts also resulted in both reactants being present (along with products). More research is needed.