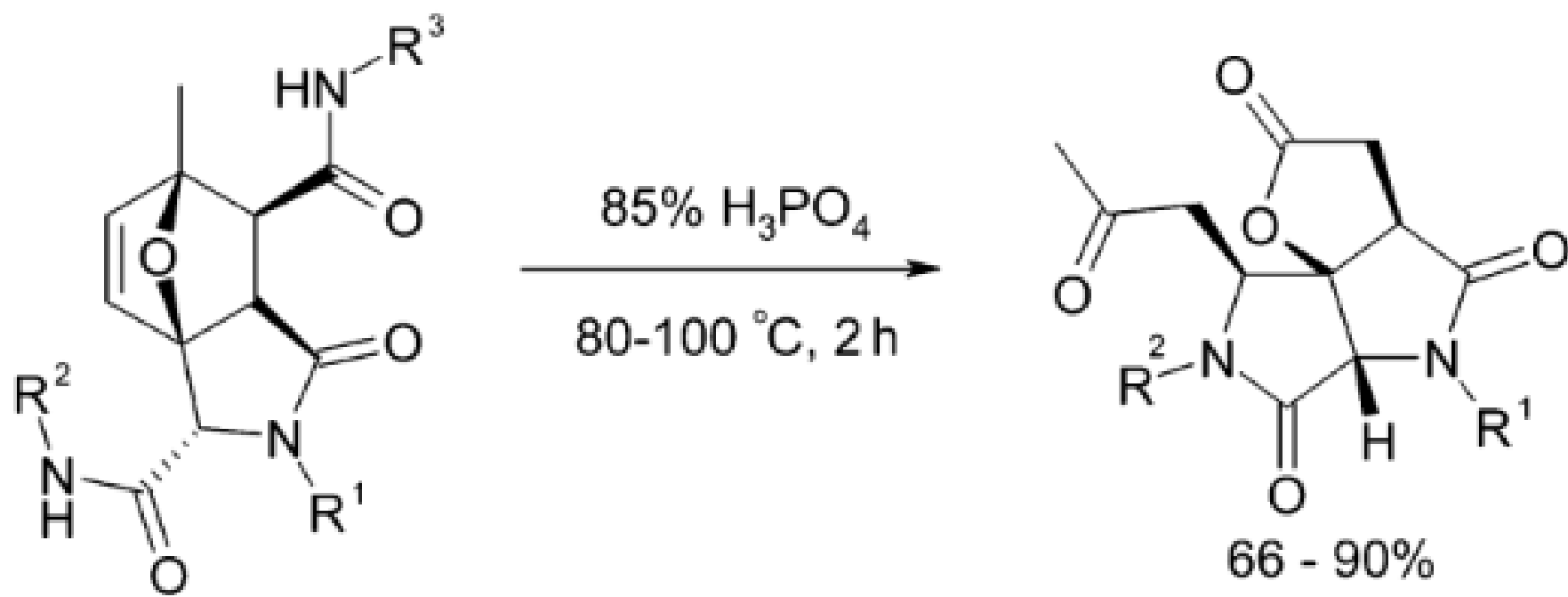


Complexity-Enhancing Acid-Promoted  
Rearrangement of Tricyclic Products of  
Tandem  
Ugi 4CC/Intramolecular Diels-Alder Reaction

**Organic Synthesis**

Omar Real Abreus

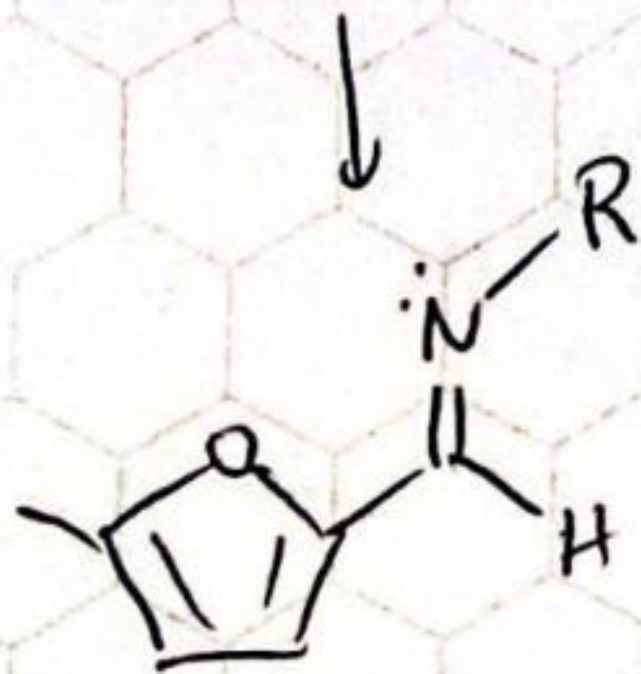
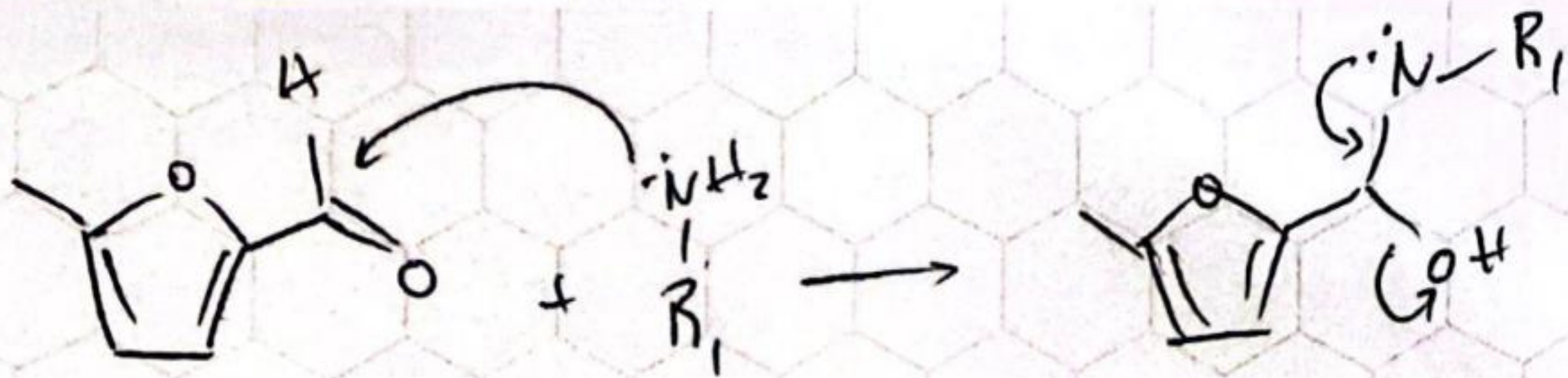


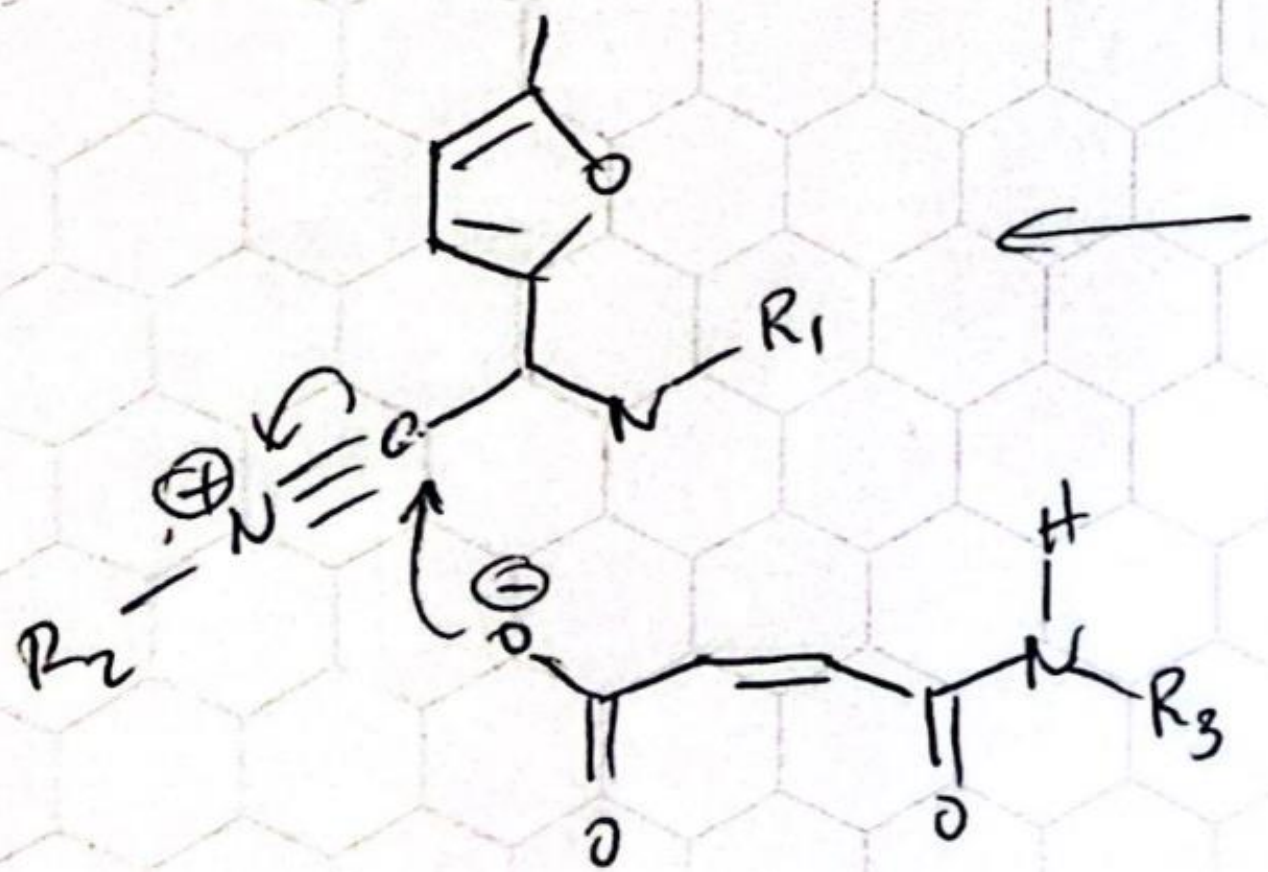
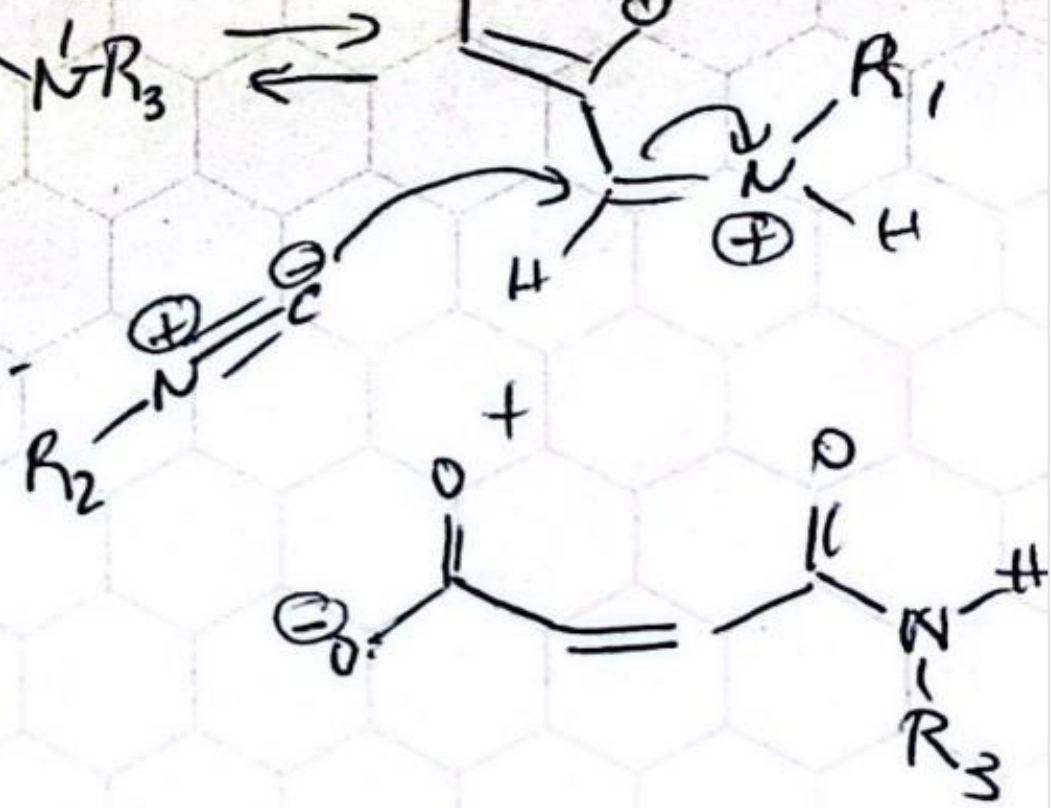
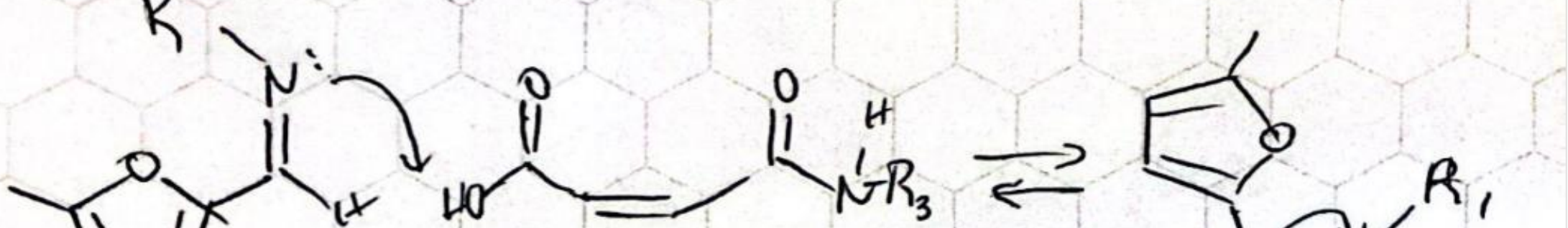


**Otto Paul Hermann Diels (1876 -1954)**

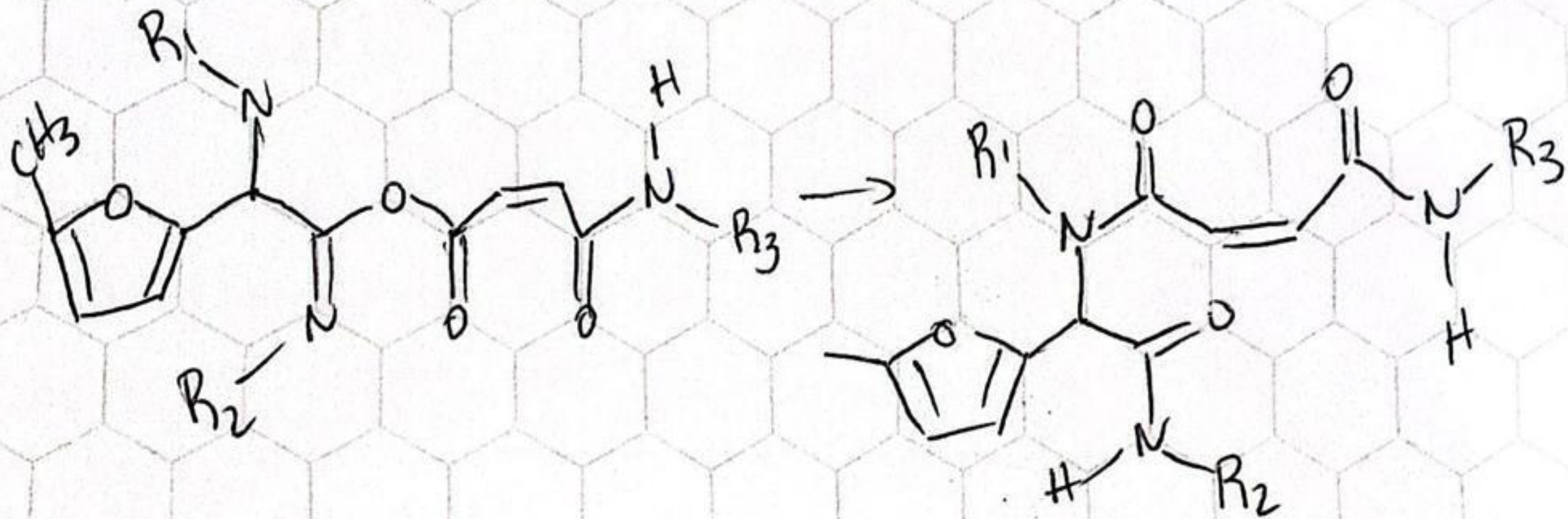


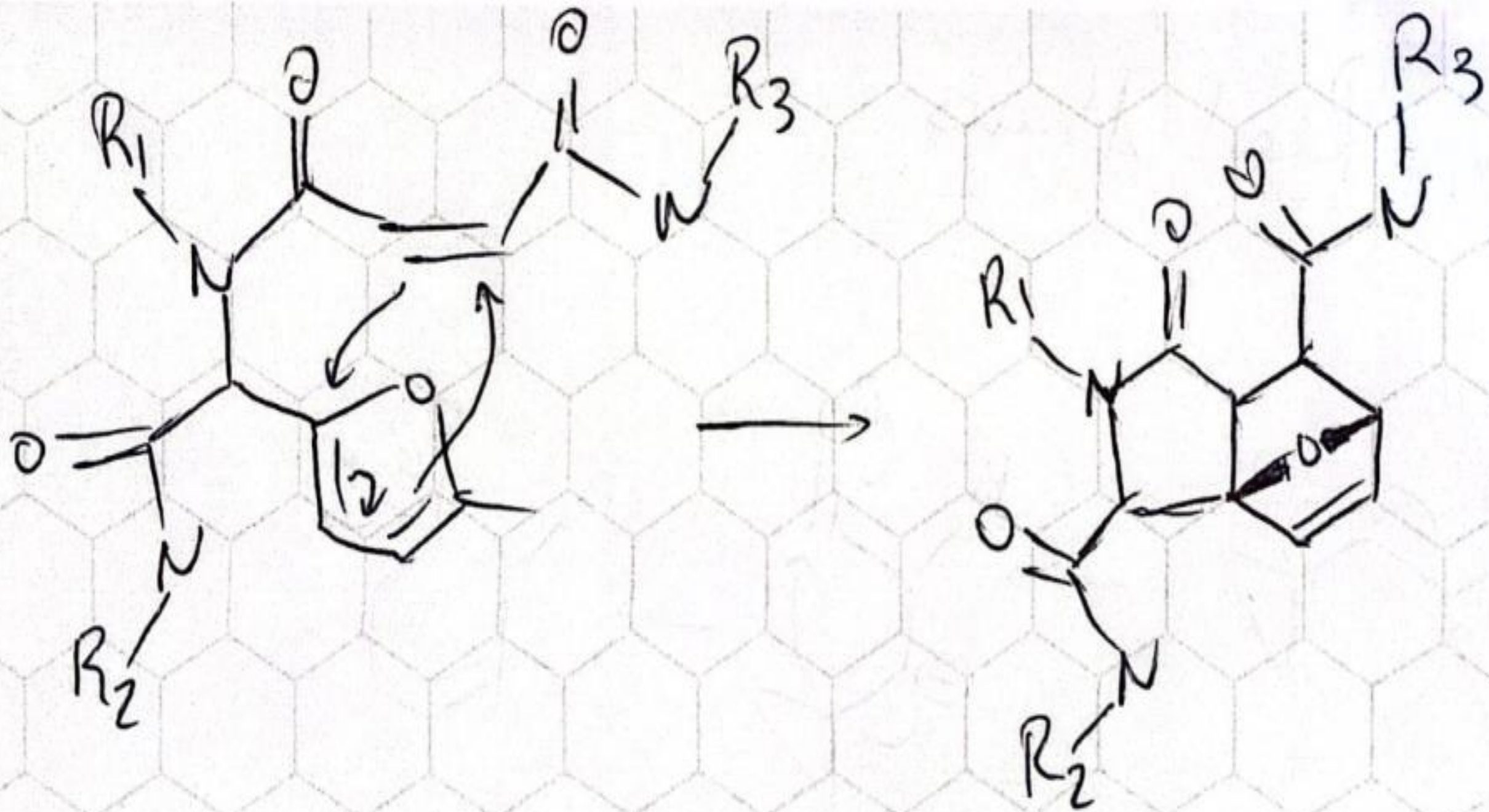
**Kurt Alder (1902-1958)**

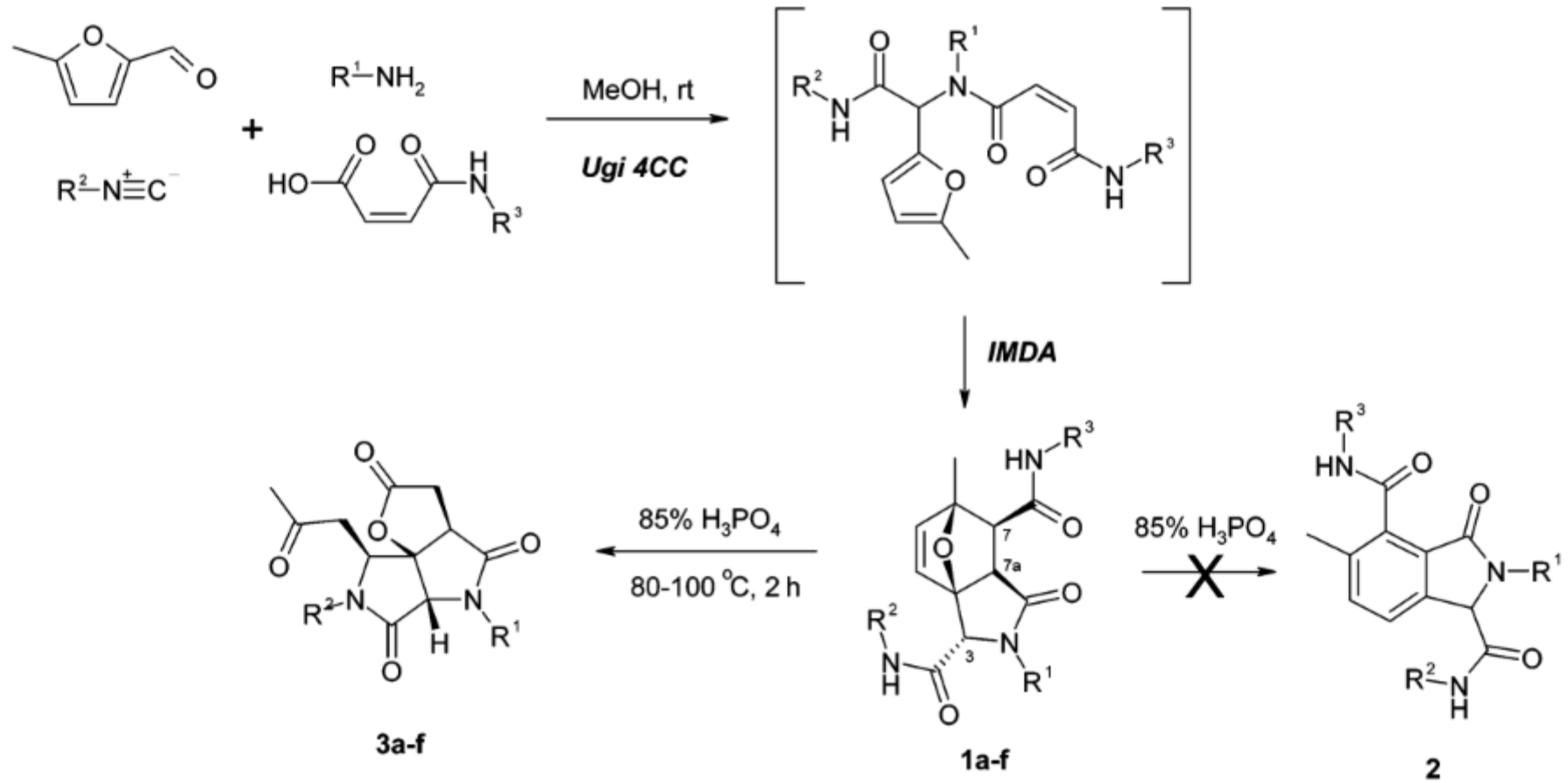






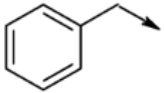
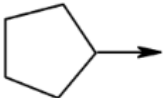
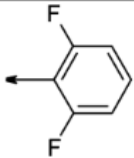
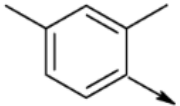
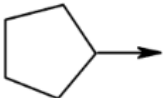
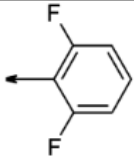
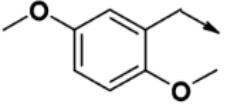
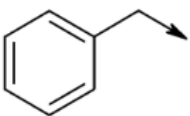
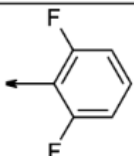
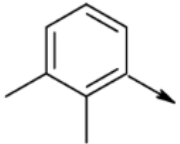
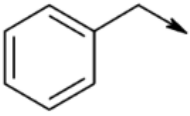
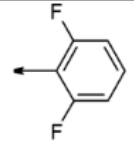
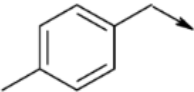
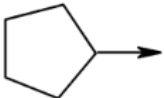
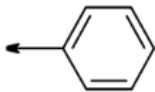
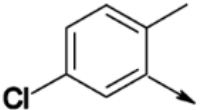
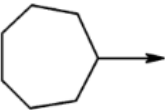
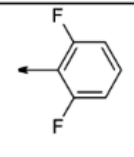




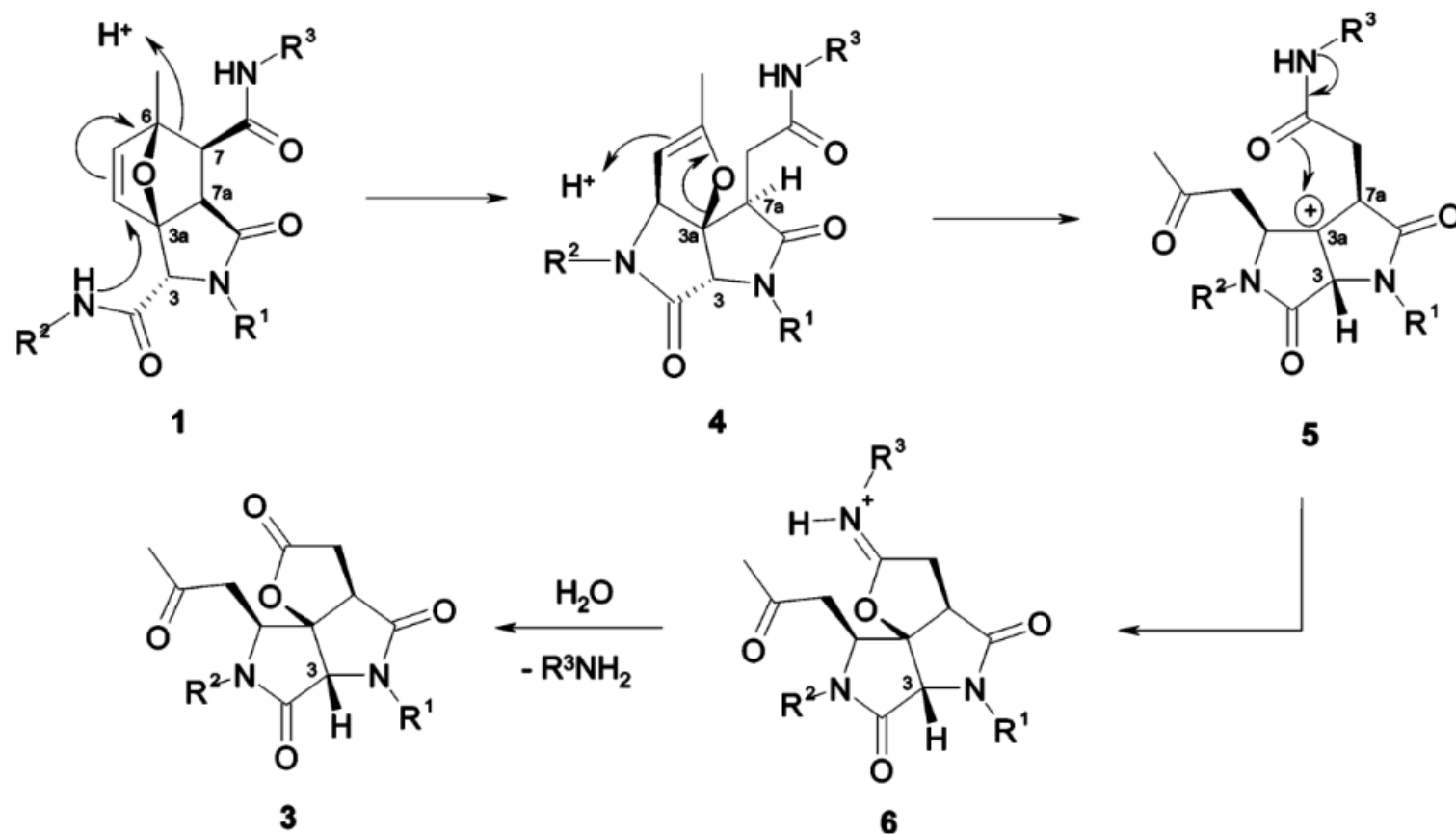




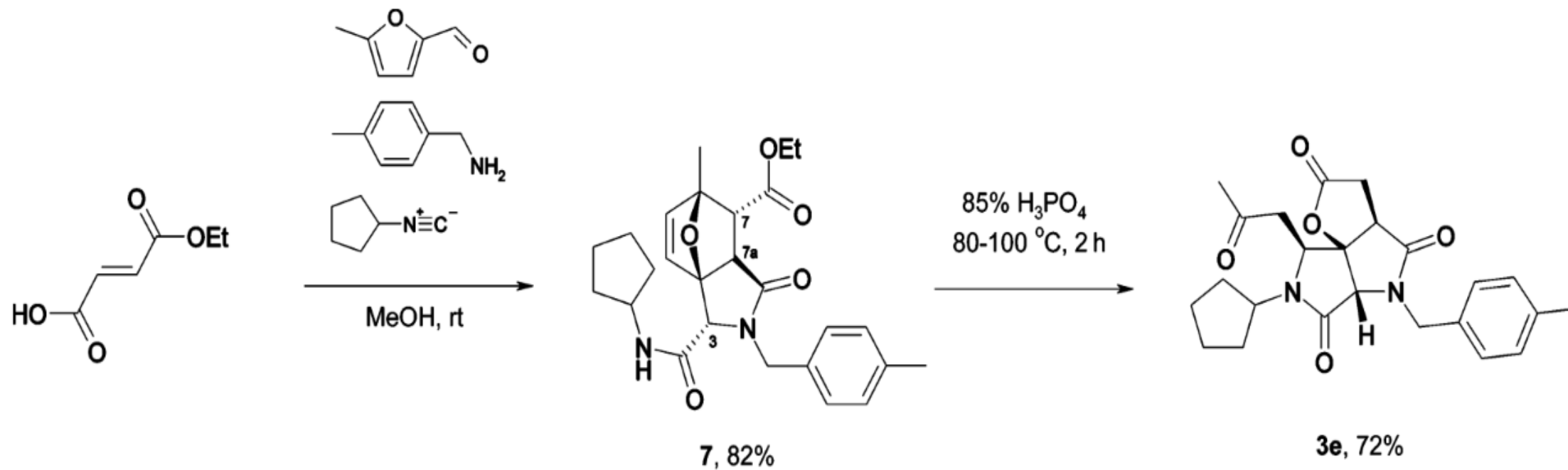
**TABLE 1. Tricyclic Ugi 4CC/IMDA Compounds (1) Prepared in This Work and Products of Their Rearrangement in 85% H<sub>3</sub>PO<sub>4</sub> (3)**

compound	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	yield of 1, %	yield of 3, %
<b>1(3)a</b>				92	66
<b>1(3)b</b>				89	75
<b>1(3)c</b>				78	90
<b>1(3)d</b>				79	74
<b>1(3)e</b>				68	88
<b>1(3)f</b>				79	87

**SCHEME 2.** Proposed Mechanism for the  $\text{H}_3\text{PO}_4$ -Promoted Rearrangement of the Epoxyisoindol-1-ones **1** into Tricyclic Lactams **3**



**SCHEME 3. Preparation of a Tricyclic Ugi 4CC/IMDA Product Using Ethyl Monofumarate and its Rearrangement in 85%  $\text{H}_3\text{PO}_4$**



## SCHEME 4. Dehydrative Aromatization of an Ugi 4CC/IMDA Product

