REACTION OF ELECTRONS TRAPPED IN CRYOGENIC MATRICES WITH BENZOPHENONE

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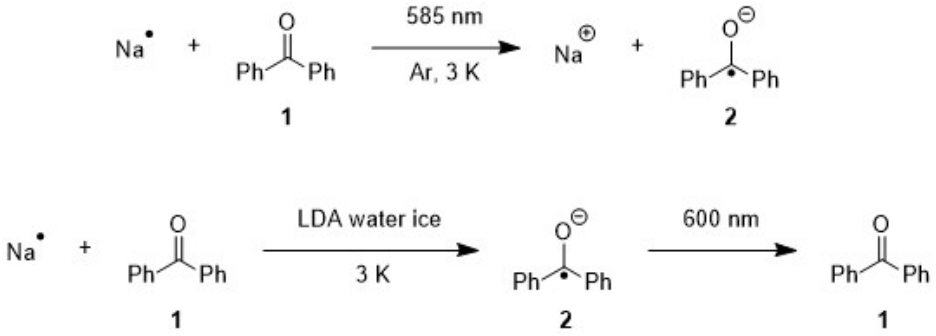
Electron transfer reactions are among the most elementary chemical reactions, which play a fundamental role in organic synthesis, electrochemical processes, and biochemical reactions. In our study, we used sodium as a source of electrons and probed the formation of benzophenone radical anion **2** in an argon and low density amorphous (LDA) water ice matrices using matrix isolation technique.



In solid argon, mixture of sodium vapors and benzophenone **1** was co-deposited and after irradiating the matrix with the visible light, electron transfer takes place from sodium to **1** under the formation of radical anion **2**. In LDA water ice, hydrated electrons are produced after co-deposition of water with sodium. The hydrated electrons react with benzophenone without photochemical activation and resulted in radical anion **2**. However, the photoexcitation of radical anion **2** yielded back benzophenone **1** after losing an electron to the matrix.[1]

Reference:

[1] A. Somani, W. Sander, *J. P. Org. Chem.* **2022**, e4335.