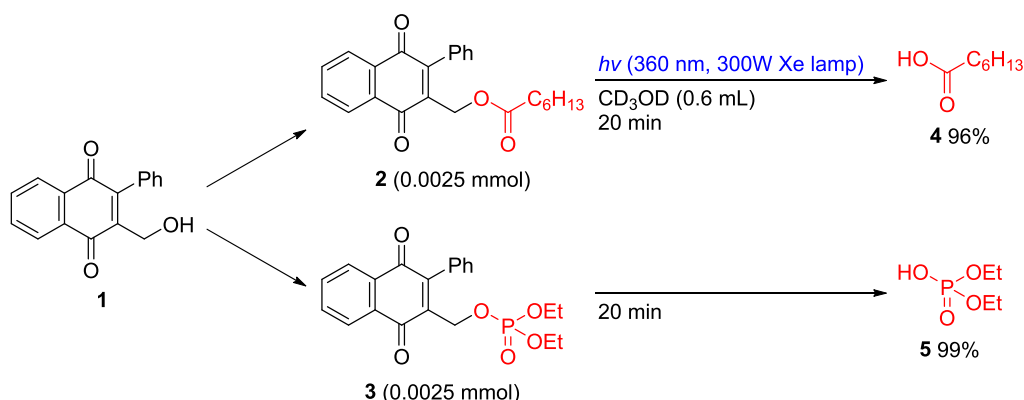# Synthesis of Novel 1,4-Naphthoquinone-based Compounds Photoreleasing Acids

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1,4-Naphthoquinone (NQ) has two carbonyl groups liked to the aromatic ring and a C=C double bond conjugated to them, and exhibits unique photochemical behavior derived from these groups.[1] These functional groups can be used as a foothold for various chemical transformations. These chemical properties inspired us to develop the concise synthesis of a new family of NQ-based compounds that have an aryl group at the C-2 position and a hydroxymethyl group at the C-3 position and demonstrated their photoreleasing ability of alcohols by photoirradiation to their compounds condensed with alcohols.[2] Herein, we will present the synthesis of various acids masked with the NQ-based framework and demonstrate the photoreleasing ability. Various acids, such as carboxylic acids and phosphoric acids, were applicable to photoreleased substrates with NQ-based compounds.

First, compounds **2** and **3** derived from NQ-based alcohol **1** with heptanoic acid (**4**) and diethyl phosphate (**5**) were prepared. When 360 nm light with 300W Xe lamp was irradiated to a 4.2 mM solution of **2** and **3** in MeOH, the photoreactions were completed after 20 min to give **4** and **5** in almost quantitative yields (96% and 99%, respectively). Since **2** and **3** did not suffer from solvolysis with CD_3OD under dark conditions, the light irradiation is required for the release of **4** and **5**. **1** is thus concluded as a photoreleasing platform for various acids.

1) O. Brahmia and C. Richard, *Photochem. Photobiol. Sci.* **2003**, *2*, 1038. 2) T. Morimoto, M. Suzuki, H.Y. Liu, K. Kakiuchi, and T. Kawai, *The 102nd CSJ annual meeting*, the last presentation.