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Photochemical Reactions of α -Terpinene and Acenaphthene under Concentrated Sunlight

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Nesibe AVCIBAŞI and Sıddık İÇLİ
Department of Chemistry, Faculty of Science, Ege University,
Bornova, 35100 İzmir-TURKEY
e-mail: icli@bornova.ege.edu.tr

Andrew GILBERT
Department of Chemistry, University of Reading, Whiteknights, Reading,
Berkshire RG6 6AD UK

 [Keywords](#)
 [Authors](#)



chem@tubitak.gov.tr

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Abstract: α -Terpinene was successfully dehydrogenated to p-cymene in photocatalytic reaction with benzophenone and cupric ions under 40 suns concentrated sunlight irradiation, proving that photodehydrogenation reactions may be employed for the synthesis of fine chemicals under sunlight. Acenaphthene dehydrogenation under concentrated sunlight resulted in the minor formation of acenaphthylene and the quantitative formation of acenaphthenone when the solution was aerated. Stable benzylic-type radical intermediates are thought to lower the yield of dehydrogenation reactions.

Key Words: Photodehydrogenation, solar irradiation, hydrogen abstraction, benzophenone, α -terpinene, acenaphthene

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