PHOTOCHEMICAL AND THERMAL DECOMPOSITIONS OF 5-SUBSTITUTED 4,6-DIHYDRO-3,7-DIARYL-1,2,5-TRIAZEPINES

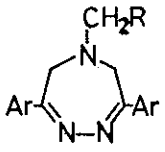
Otohiko Tsuge and Seiichi Yogi

Research Institute of Industrial Science, Kyushu University,

Hakozaki, Higashi-ku, Fukuoka 812

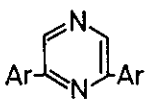
The photochemical and thermal decompositions of 5-substituted 4,6-dihydro-3,7-diaryl-1,2,5-triazepines (1) were investigated. Irradiation of 1a in benzene under the influence of air afforded acetophenone, benzonitrile, benzaldehyde, dibenzoylhydrazine and biphenyl, although 1a did not undergo photochemical decomposition in a stream of nitrogen. With benzophenone as a sensitizer, irradiation of 1a-1d afforded the corresponding 2,6-diarylpyrazine (2) and/or 1-benzyl-3,4-diarylpyrrole (3) along with ammonia, acetophenone, benzonitrile and so on. In the irradiation of 1e, however, the benzophenone was converted into benzopinacol, and 1-(p-tolyl)-4-phenylimidazole (4) was formed.

Thermolysis of 1a-1d in refluxing xylene afforded the corresponding 2,4-disubstituted imidazole (5) and/or 3,5-diarylpyrazole (6) together with acetophenone and benzonitrile. However, 1e gave 4 under similar thermal decomposition. The reaction courses for the formation of 2-6 are also discussed.



1

a: Ar=R=Ph
b: Ar=p-tolyl, R=Ph
c: Ar=Ph, R=p-tolyl
d: Ar=Ph, R=methyl



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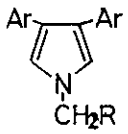

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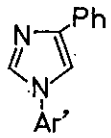
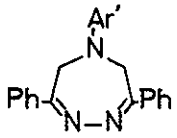
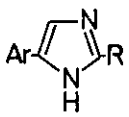


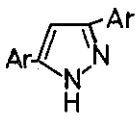
4 (Ar'=p-tolyl)



1e (Ar'=p-tolyl)



5



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