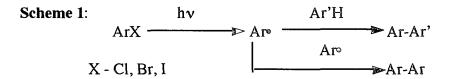
## NOVEL PHOTOREACTIONS OF 4-BROMO-3-METHYL-1-PHENYL-5-PYRAZOLONE IN THE PRESENCE OF AROMATIC HYDROCARBONS

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Aryl halides (ArX) are well known to undergo a photocoupling reaction with aromatic hydrocarbons leading to heterocoupling biaryls (Ar-Ar') via the initial formation of aryl radical intermediates as the major path and the formation of homocoupling biaryl (Ar-Ar) is a very minor path [1] (Scheme 1).



The latter exceptional pathway leading to homocoupling biaryls was found in the photoreaction of 5-bromo-1,3-dimethyluracil in the presence of 9-methylanthracene to give a homocoupling product, 5,5'-bis(2,3-dimethyluracil) like Ar-Ar as the major product [2]. In the course of our studies on the chemistry and photochemistry of pyrazolones, we have investigated the photochemical reaction of 4-bromo-3-methyl-1-phenyl-5-pyrazolone (PyHBr) in the presence of various aromatic hydrocarbons and found the reaction showed different features depending on the nature of the hydrocarbon used.

Irradiation of PyHBr in the presence of naphthalene in acetonitrile with a high-pressure mercury lamp gave a bispyrazolone 1 in 64% yield, while irradiation in the presence of phenanthrene in acetonitrile afforded a mixture of 1 (25-29%) and its dehydrogenated compound 2 (36-41%). When the irradiation was carried out in the presence of anthracene, the photodimer of anthracene was the sole product.