

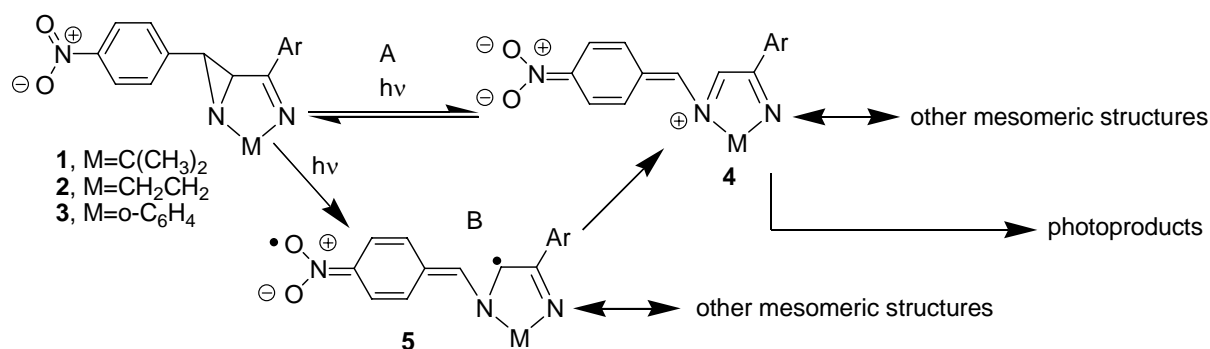
SYNTHESIS AND INVESTIGATION OF PHOTO- AND RADIOCHROMIC POLYCYCLIC AZIRIDINES

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It is known that bi- and tricyclic aziridines **1-3** are highly sensitive photochromes in the crystalline state. This is accounted for reversible heterolytical cleavage of the C-C aziridine bond giving rise to colored azomethine ylides **4** (pathway **A**):



In the present work a detailed study of the photo-induced transformations of compounds **1-3** in crystalline state, in solutions, in polymeric and liquid-crystalline matrix using chemical methods, UV, IR spectroscopy and quantum chemical calculations was carried out. Dynamics of electron spectra changes and some photo as well as conventional reactions of **1-3** were studied. An alternative two steps photo-transformation (pathway **B**) including homolytical bond cleavage and formation of deep-colored biradical intermediate **5** was proposed.

A convenient synthetic approach to potentially radiochromic aziridines **1-3** [1] containing polyaryl substituents utilizing the Suzuki coupling with micellar catalysis [2] was also developed.

1. Chebanov V.A., Zbruyev A.I., Desenko S.M. et al. // *Journal of the Korean Association of Radiation Protection*, **2005**, 30, 1, pp. 31-34
2. Vashchenko V.V., Gudby J.V., Petrenko A.S. // *XIX Ukrainian conference in organic chemistry*, Lviv, **2001**, p. 134.