MS37-P05 | PHOTOINITIATED SOLID-STATE REACTIONS OF KETONES WITH VINYL-ACETYLENE FRAGMENTS

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Chalcones and cyclic ketones with vinyl fragments are known to undergo photoinitiated reactions both in solids and solution [1, 2]. Taking into account great potential of solid-state photoinitiated reactions for a single-step synthesis of cyclobutene derivatives a response of a series of cyclic and acyclic ketones with vinyl-acetylene fragments to UV irradiation was studied. Possibility of these compounds to take part in above reaction is evidenced by conversion of 5-phenyl-1-(pyrid-2-yl)pent-2-en-4-yn-1-one to rctt (3,4-bis(phenylethynyl)cyclobutane-1,2-diyl)bis(pyridin-2-ylmethanone) at recrystallization from MeCN on daylight. Irradiation of the title compounds with Xe laser (360 nm) for 16 – 20 h results in single crystal degradation, thus, reaction products were studied using ^{1}H, ^{13}C NMR and FT-IR spectroscopies. Such solid-state reactions as degradation of cyclic ketones with ring opening, [2+2] cycloaddition of olefin bonds, and pedal motion were expected.

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[1] S. E. Hopkin, et al. J. Chem. Soc., Perkin Trans. 2 1991, 1131.
[2] S. Z. Vatsadze, et al. Russ. Chem. Bull. 2006, 55, 1184.