

MS31-P10 | PHOTOINITIATED [2+2] CYCLOADDITION REACTIONS OBSERVED IN D-METAL(II) MALONATES WITH N,N'-CONTAINING LINKERS

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Solid-state photocycloaddition reactions are known as a path to cyclobutane derivatives that proceeds without any solvents or catalysts. We aimed to rationalize the solid-state synthesis of cyclobutane derivatives from coordination compounds with olefins fixed in reactive positions by metal atoms. Information about coordination modes of malonate anions (An^{2-}), metal environment, $\text{M}^{\text{II}} : \text{An} : \text{L}$ ratio, and underlying nets of complexes was extracted from the CSD. The most abundant composition, connectivity and periodicity of complexes obtained from $\text{M}^{\text{II}} : \text{An}^{2-} : \text{L} : \text{H}_2\text{O}$ reaction mixtures were quantitatively estimated. Newly obtained complexes realize highly probable compositions, M^{II} environment and ligand connectivities [1]. The majority of these complexes also have one of the predicted architectures. The effect of the precursor on the composition and dimensionality of the net was investigated.

Some of complexes underwent photoinitiated homocycloaddition reactions to one of two 1,2,3,4-tetrakis(4-pyridyl)cyclobutane isomers via 2D→2D, 3D→3D or 0D→1D transformations of complexes. Besides, the first diastereoselective solid-state cross-cycloaddition reaction afforded a racemic mixture of two enantiomers of an unsymmetrical (1*R*,2*S*,3*S*)-substituted cyclobutane derivative in high yield [2].

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[1] E. N. Zorina-Tikhonova, et al. *IUCrJ* **2018**, *5*, 293.

[2] A. D. Volodin, et al. *ChemCommun.* **2018**, *54*, 13861.