OP-15

SUPRAMOLECULAR COMPOUNDS FORMED BY ORGANIC PHOTOCHROMES AND METAL-ORGANIC COORDINATION POLYMER

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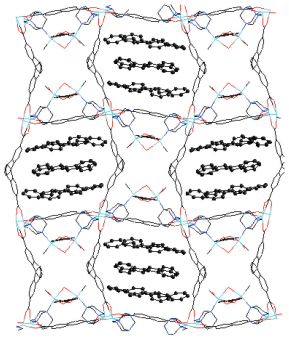

Figure 1. Fragment of Adduct-1 structure. Wire presentation. View along a axis. H atoms are omitted for clarity.

Organic photochromic compounds in the solid state are of great interest for modern microelectronics. In the solid state, photochromes are more stable, since side reactions associated with the solvent lead to photodegradation. Our idea is to incorporate a photochrome into the cavity of a metal-organic framework (MOF). We hope that such systems would have higher quantum yields and would be more resistant to photodegradation.

For the synthesis of hybrid materials we used the MOF $[Zn_4(dmf)(ur)_2(ndc)_4]\cdot 5DMF\cdot H_2O$ (ndc^{2-} is 2,6-naphtalenedicarboxylate, ur is urotropin, and dmf is N,N'-dimethylformamide) with the size of channels 10.5×10.5 Å, and two photochromes - *trans*-stilbene[1] and diarylethene 2,3-bis-(2,5-dimethylthiophen-3-yl-cyclopent-2-en-1-one (DMTC).[2] The composition of Adduct 1 (*trans*-stilbene + MOF) was 1:3 (Figure 1). Adduct 1 exhibits photochemical activity. The composition of Adduct-2 (DMTC + MOF) was 1:1. Adduct 2 exhibited photo chromic reactions typical for diarylethenes.

Therefore, incorporation of organic photochromes into the MOF seems to be a promising approach for creating hybrid materials.

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REFERENCES

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