

MS31-P11 | MOLECULAR SWITCHES IN NANOCONTAINERS

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Molecular switches, entities that can be toggled between two or more forms upon exposure to an external stimulus, such as light, often require conformational freedom to isomerize. Confining these molecules to volumes only slightly larger than the molecules themselves can alter their properties. Molecular switching events often entail a conformational change that require the confining cage to be flexible enough to adapt to the shape of the guest and allow it enough freedom to successfully switch between the different conformers. In the absence of the cage the photoswitching can be either suppressed or the guest can be excluded from the solubilizing medium.

A very flexible, and adapting to accommodate cage synthesized from triimidazole ligand and Pd(TMEDA)(NO₃)₂ receptor [1]. The crystals of the cage containing methyl orange and pyrazol are very sensitive to the cryo protectant and undergo a single crystal to single crystal transformation. Even after cage conformational changes and the shifting of guest molecules inside, the crystals still diffract and allow a full single crystal X-ray structure analysis. The crystal structure unit cell volume is relatively large and contains a cage, one or two guest and numerous counter ions and solvent molecules.

These newly synthesized materials are a novel type of information storage medium in which messages could be written and erased in reversible fashion using light.

[1] Samanta D., Mukherjee S., Patil Y.P. & Mukherjee P.S.; *Chem. -A Eur. J.* **18**, 12322-12329 (2012)