chem2Dmat
September 03-06, 2019 • Dresden, Germany
European Conference on Chemistry of Two-Dimensional Materials

# Photoswitching of commercial azobenzenes in different environments

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Molecular switches are a class of molecules able, upon optical or thermal stimuli, to change their chemical structure in a reversible way. They have been extensively studied for useful applications in electronics and sensing[1] attracting more and more interest from scientific community, resulting in the nobel prise in Chemistry assigned in 2016 to Sauvage, Stoddart and Feringa.[2]
One of the most well-known class of switching molecules is the one of azobenzenes[add general description of azobenzenes and citations] whose fundamental properties have been extensively studied and they are also currently used at industrial level, as example up to 70% of the world's commercial dyes are based on azobenzene.[1]
Often, their optical properties are studied in solution; though, in most of the possible industrial applications[3], from (opto)electronics to composite materials, azobenzenes are in solid environments; as example, applications in electronics require the azobenzenes to be deposited on a 2D substrate, possibly in ordered layers.[4] Applications as industrial dyes require the azobenzenes to be dispersed in a 3D material (typically a polymer).
Here, we study the properties of two commercial azobenzene molecules, and how its cis-trans switching behavior is influenced when the molecule is solubilized in different solvents, dispersed in polymers, deposited on a substrate or arranged in 3D crystals.
To study the molecule in so many different systems, we have to use a combination of different techniques to study the morphological and the electronic properties, such as Scanning Probe Microscopies, conventional and time-resolved UV-vis spectroscopies and X-ray Photoelectron Spectroscopies.

## References

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