Polymorphism and Photochromism of Salicylideneaniline

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Organic compounds exhibiting photo- or thermochromicity have been of considerable interests owing to their properties and possible applications. The photochromism of salicylideneaniline (SA) was discovered by Senier *et al.* at the beginning of last century. In 1964, Cohen *et al.* [1] observed polymorphism.

It is generally accepted that the stable form of SA in the ground state is the enol form, with an intramolecular hydrogen bond between the hydroxyl group and the nitrogen atom. Upon photoexcitation of this enol form with UV light, it undergoes an ultrafast proton transfer from the hydroxyl group to the nitrogen, due to the electronic redistribution in the excited state. The proton transfer generates a keto tautomer in the excited singlet state.

Here, we report on the alpha-2-polymorph structure of SA in the ground state [2], already mentioned by Cohen. We shall also described a new polymorph, beta, which features a planar SA molecule and is therefore thermochromic. Then, we revisit the alpha-1-polymorph structure of SA described by Destro *et al.* [3], but reconsidering their hypothesis. We suggest a lowering of the symmetry with the aim to improve the structure solution.

[1] Cohen M.D., Schmidt G.M.J., Flavian S., *J. Chem. Soc.*, 1964, 2041-2051.
[2] Arod F., Gardon M., Pattison P., Chapuis G., *Acta Cryst.*, 2005, *in press*.
[3] Destro R., Gavezzotti A., Simonetta M., *Acta Cryst.*, 1978, **B34**, 2867-2869.

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