Diffuse scattering study of γ-pigment red 170
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Pigment Red 170 is an economically important automotive coating in the paint industry, but subject to fading. Structurally it has four polymorphic forms namely the α, β, γ and δ-polymorph. Among them the γ-polymorph shows superior pigment properties. [1] It has been found that modifications of some of the molecule’s substituents can affect the durability, but a rational approach to such modifications requires an understanding of the crystal structure of the pigment. Despite the importance of Pigment Red 170 in many industrial applications only a few structural studies have been carried out. [1,2] Only recently, Schmidt et al., have determined the structures of the α- and γ-phases from a combination of X-ray powder diffraction and crystal structure prediction algorithms. [1,2] According to the description given, both phases have layer-like structures.

Single crystal data of the γ-phase have been collected by Schmidt on a sealed tube diffractometer. They show diffuse scattering. We have collected Synchrotron data from the same crystal and found that the observed rods of diffuse scattering are typical of faulted layer stacking. There is currently some uncertainty concerning the correct unit cell that should be used to describe the average structure. The Synchrotron data suggest a larger unit cell than that derived by Schmidt. We will describe our results from the attempts to derive the correct unit cell and solve and refine the average structure.

Fig. 1. The h2l reciprocal lattice plane from the γ-phase of Pigment Red 170 collected on the BM01A beamline at SNBL (ESRF).


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