

MS43. Thin films, stresses and textures

Chairs: Fabiola Liscio, Magali Morales

MS43-O1 Thiophene based molecules on solid surfaces: the appearance of polymorphs

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The origins of specific polymorph phases within thin films are still not well understood. Based on a set of similar molecules – mainly thiophene based molecules with conjugated cores and flexible side chains at the terminal ends – the appearance of polymorph crystal structures at solid surfaces will be discussed. The crystallisation is studied starting from the first monolayer up to device relevant film thicknesses. Variation of the thin film deposition method and deposition parameters lead to different phases. Some of the phases (surface induced phases) are observed only within thin films and the other phases (single crystal phases) are stable as macroscopic single crystals. For some molecules a quite rich appearance of different phases is observed, while for other cases only the single crystal phase is observed. Solution of the crystal structures reveal that the molecular packing as well as the conformation of the molecules can be quite different. The appearance of surface induced crystal structures, their characteristic features and their stability will be discussed.

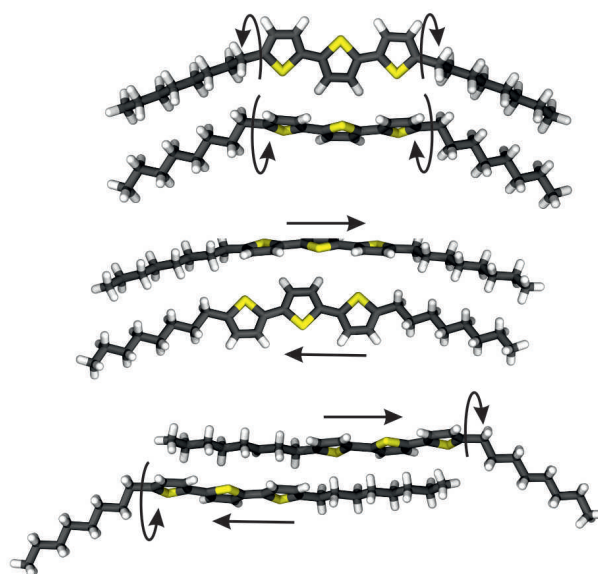


Figure 1. Packing of two neighbouring dioctyl-terthiophene molecules as found in the different phases observed within thin films (top), within the single crystal phases at $T = 100$ K (middle) and $T = 296$ K (below). Arrows mark the differences in the conformation (top, below) and in the packing (middle, below).

Keywords: surface induced crystal structures