

几种极性有机晶体的生长习性与形成机理 2: 分子堆积、界面结构与晶体的习性

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摘要 极性有机晶体在不同的溶剂中具有明显不同的生长习性, 主要有两个方面的原因: 一是极性有机晶体属非中心对称性晶类, 晶体具有极轴, 极轴的存在对分子堆积和晶体生长具有重要影响; 另一是极性有机晶体的界面结构不同, 溶剂与晶体界面的相互作用不同, 使得晶体同一面族的生长速率不同, 从而导致了晶体习性的改变。本文从几种典型极性有机晶体的分子排列和结构特征出发, 着重探讨了极性有机晶体的界面结构的差异对晶体习性的影响; 结合晶体生长界面与溶剂分子的相互作用进一步理解了晶体生长的溶剂效应; 通过理解极性有机晶体的习性机制, 探讨了晶体实际形态的控制。

关键词 [晶体生长](#) [溶剂效应](#) [极性](#) [苯甲醛缩苯胺](#)

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Growth habits and mechanism of several polar organic II. Molecular packing, interface structures and growth habits

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Abstract Growth habits of polar organic crystals are mainly determined by : (1) the internal structures of the crystals; and (2) the interactions of solvent molecules with the growth interfaces, particularly with two polar faces. Since polar organic crystals have noncentric structures, the existence of polar axis (axes) in the crystals has a significant effect on the molecular arrangement and on the crystal growth. On the other hand, different interface structure of two polar faces have different interaction with solvent molecules, solvent absorption on these faces are different. Therefore, the relative growth rates of these faces are different and thus lead to the habit modification. Based on these points, the molecular packing, interface structure and interface-solvent interactions of several polar organic crystals with a structure A-C₆H₄-D such as 4-amino-4'-nitrodiphenyl sulfide (ANDS), o-dicyanovinyl anisole (DIVA), N-4-nitrophenyl-(L)-prolinol (NPP) and 4-nitro-4'-methyl-benzilidene aniline (NMBA) have been investigated from the standpoint of crystal chemistry and structural perspectives. It is possible that growth habits of polar organic crystals can be controlled based on the interface-solvent interactions by choosing a suitable solvent or tailor-made additive.

Key words [CRYSTAL GROWTH](#) [SOLVENT EFFECT](#) [POLARITY](#) [BENZALANILINE](#)

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