

## Effect of polymer adsorption on crystallization of small organic molecules

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The crystallization process of drugs is an important unit operation in the pharmaceutical industry. The controlled preparation of crystallites of a defined size can determine the kinetic aspects of solubility (drug release), crystal superstructures, and mechanical/flow properties. It has been found that the morphology of polar organic crystals could be changed by the addition of oppositely charged polymeric additives, which can physically adsorb onto the surface of the smaller crystal units. To understand the role of polymer adsorption, the crystallization of atorvastatin calcium (a cholesterol-lowering statin drug) was performed in methanol/water mixture. Polyethyleneimine(PEI) was used as polymeric additive. This polymer-directed crystallization resulted in the formation of mesocrystals, artificially stabilized by polymeric additives. Interesting morphological features were observed in the mesocrystal cases. This polymer-directed crystallization resulted in the formation of mesocrystals, artificially stabilized by polymeric additives.