Impact of surface chemistry on crystallization of acetaminophen

Using polymeric surfaces is a novel way to control crystallization however, the mechanism is still ambiguous. In the present study, chitosan (CS) films that were doped with different molecules were employed to investigate the impact of surface chemistry on the heterogeneous crystallization behavior of acetaminophen (APAP).Crystal growth rate and crystallization kinetic measurements of APAP on various substrates were performed. Fourier transform infrared spectroscopy was used to probe intermolecular interactions between APAP and CS films. The results were interpreted with the aid of molecular simulations. It was found that substrates with more hydrogen bonding groups that could interact with APAP promoted its crystallization.