

## Effect of Solvent Properties on Hierarchical Self-assembly of Perylene Diimide Crystals on a Water Substrate

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Most small molecules including perylene diimide have limitations for generation of small feature sized NWs (around 10 nm width) due to their low solubility in common organic solvent and rapid crystallization behavior. Here in, the small feature size of PDI crystals around 10 nm width and hierarchical nanostructures of self-assembled PDI crystals can be modified by adjusting of self-assembly conditions. We tried to confirm the effect of solvent properties (rate of evaporation and solubility in water) on controlling of the hierarchical nanostructures and crystalline properties of self-assembled PDI crystals. We successfully induced hierarchical self-assembly of PDI crystals using pristine PDI molecules without any other synthetic methods and soluble additives for the first time, and our results present the possibility to precisely control hierarchical self-assembly of PDI crystals with crystallinity control.