

## **Phase transitions and behavior in organic semiconductor thin films**

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The talk will deal with phase transitions and behavior of small molecule organic semiconductors (OSMs) as induced by various factors. At the beginning, I will give a short introduction to x-ray scattering techniques, which are main tools in the presented research, and physics and chemical nature of OSMs. Thereafter, individual cases of observed phase behavior will be discussed: (I) metal surface modification induced ultra-thin film phase and bulk phase orientation for para-sexiphenyl grown on Cu(110) surfaces; (II) thickness hindered  $\beta$ -phase nucleation and two-step phase transition observed for 5,11-bis(triethyl silylethynyl) anthradithiophene on amorphous substrates; (III) molecular mixing induced anisotropic ordering and smectic C phase appearance in pentacene-diindenoperylene binary mixture. Explanations for the observed behavior in the individual systems (I-III) will be provided based on substrate surface morphology and strain accumulation in molecular film; competition between entropy, molecules' steric properties, and anisotropic inter-molecular interactions; and competition between bulk and surface energy of molecular crystallites, respectively.