

Light-Matter Interactions in Organic Semiconductor Microcavities

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NNIN Facilities utilized: Characterization Facility & Nanofabrication Center

DESCRIPTION OF WORK

- ◆ Study interaction between organic molecules and confined photons
- ◆ Could be useful for development of organic lasers
- ◆ Microcavities are created using mirrors fabricated in the NFC with plasma enhanced chemical vapor deposition

MAJOR OBSERVATIONS

- ◆ Optical cavities consisting of an organic slab between two mirrors were fabricated
- ◆ The cavity standing wave interacts with excitations in the organic material resulting in strong light-matter coupling
- ◆ The interaction was observed in reflectivity measurements as a splitting in the cavity resonance

Mirror fabricated in NFC,
Alternating pairs of SiO₂/SiN

