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Formation of molecular doping patterns in organic–inorganic hybrid films by a capillary electrophoresis doping technique

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Abstract. A new technique is proposed for the fabrication of fine patterns of molecular doping in organic–inorganic hybrid materials by the combination of capillary electrophoresis doping (CED) and photolithography. The UV-induced polymerization of –C=C– bonds in organic groups yields a fine contrast of structures with the desired pattern in organic–inorganic hybrid films, and CED treatment introduces functional molecules only into unirradiated regions to form the doping patterns of molecules inside the films. The fine patterning of rhodamine-6G doping with from 2 to 4 μm resolution is demonstrated in hybrid films of 10 μm thickness.

Keywords: molecular-doping lithography, organic-inorganic hybrid films, capillary electrophoresis doping (CED), rhodamine-6G, photolithograp

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