

# Nanopatterning and electrospinning technologies for organic materials and polymer nanofibers

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Active nanopatterns involving organic materials or nanoparticles [1,2] as well as electrospun polymer nanofibers [3,4] are appealing building blocks for a variety of scientific fields, such as optoelectronics, photonics, nanoelectronics, and microelectromechanical systems. In particular, electrospinning technologies can be easily up-scaled to industrial level. Demonstrated devices and applications include various sub-wavelength optical components and nanofiber lasers [6-7], pressure-sensors, accelerometers and wearables made of piezoelectric polymer nanofibers [8, 9]. Next-generation electrospun nanosystems are being developed, which couple opto-mechanical properties through proper molecular components [10]. Here nanopatterning and electrospinning methods developed in our group will be presented as well as recent results on active organic nanofibers. Investigated properties include light-confinement, optical losses, stimulated emission, and anisotropy [11,12]. The research leading to these results has received funding from the European Research Council under the European Union’s Seventh Framework Programme (FP/2007-2013)/ERC Grant Agreement n. 306357 (ERC Starting Grant “NANO-JETS”, [www.nanojets.eu](http://www.nanojets.eu)).

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