

P007 Multiple length scale patterning of DNA by stamp assisted deposition

Eva Bystrenova, Pier Paolo Greco, Massimo Facchini, Chiara Dionigi, Massimiliano Cavallini, Marcello G. Cacace and Fabio Biscarini

CNR-ISMN, Via Gobetti 101, I-40129 Bologna, Italy

We report a multiple length scale patterning of DNA on surfaces based on a printing technique and dewetting. The approach yields arrays of DNA nanodots on mm^2 area, where each dot consists of a few molecules of DNA. Our method exploits the self-organisation of the DNA molecules in a solution confined between a stamps and different surfaces. The stamp imposes the larger length scale, and the self-organisation introduces the smaller characteristic length scale. The shape, size and spacing of DNA nanostructures can be modulated by the choice of stamp features and the concentration of the DNA solution, via the control of the wetting regime. The hydrodynamic instabilities contributing to the length scales of self-organisation are studied by means of finite element modelling and level set methods. Dewetting is demonstrated as a viable route to the patterning of arrays of bio-molecules across large area.