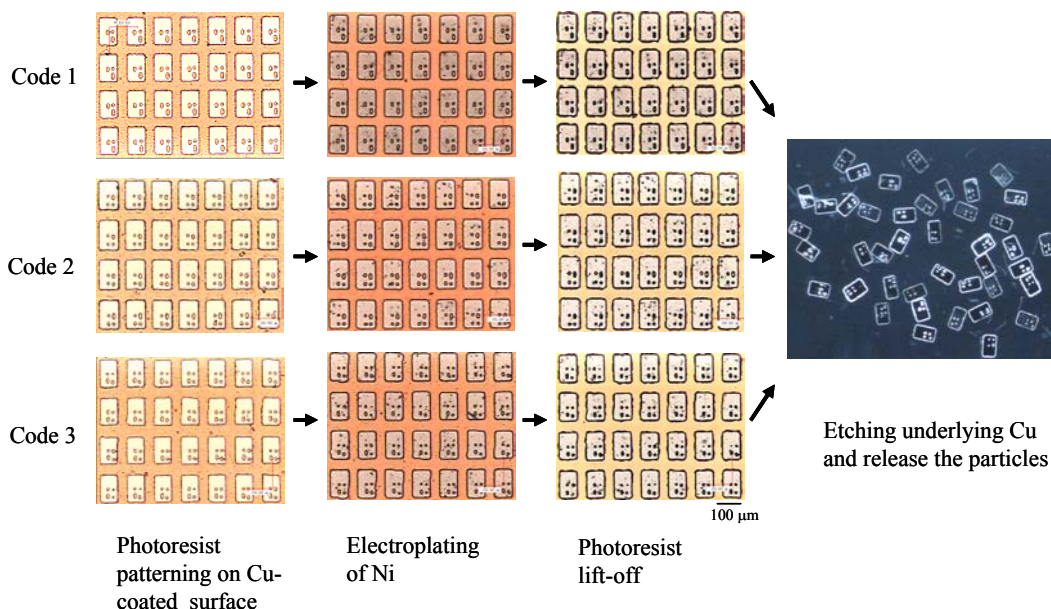


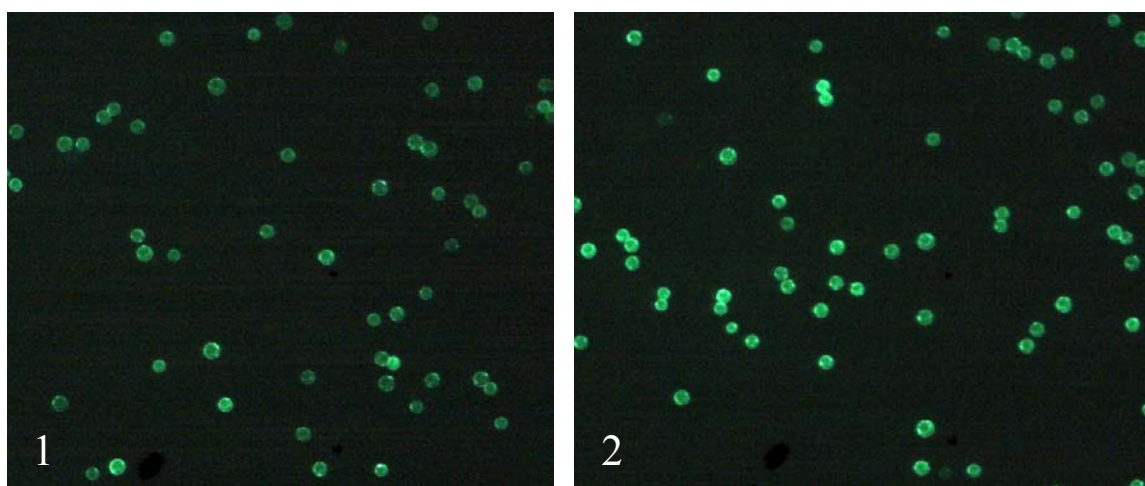
Microfabrication of encoded microparticle array for multiplexed DNA hybridization detection

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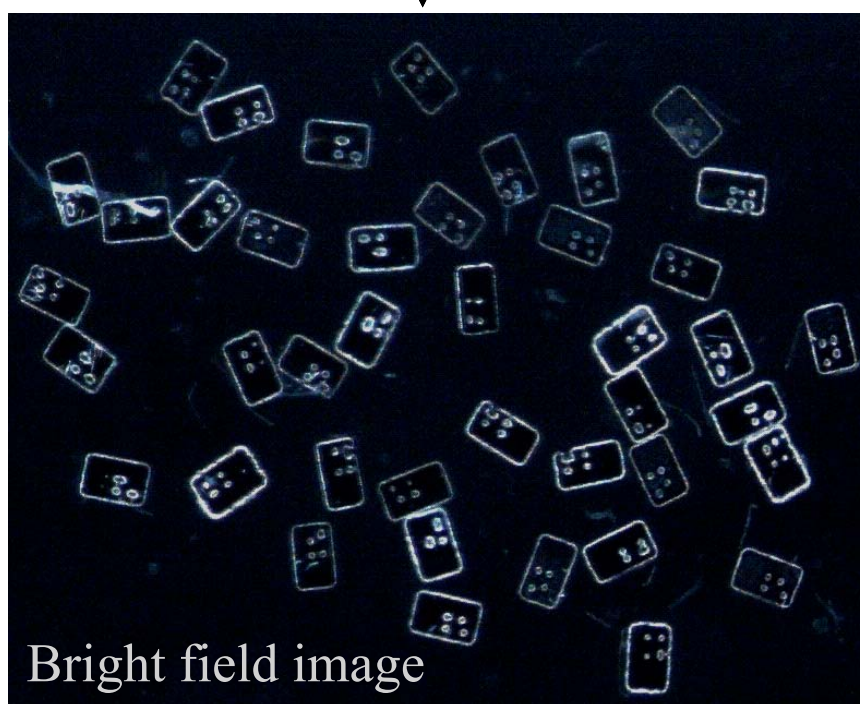
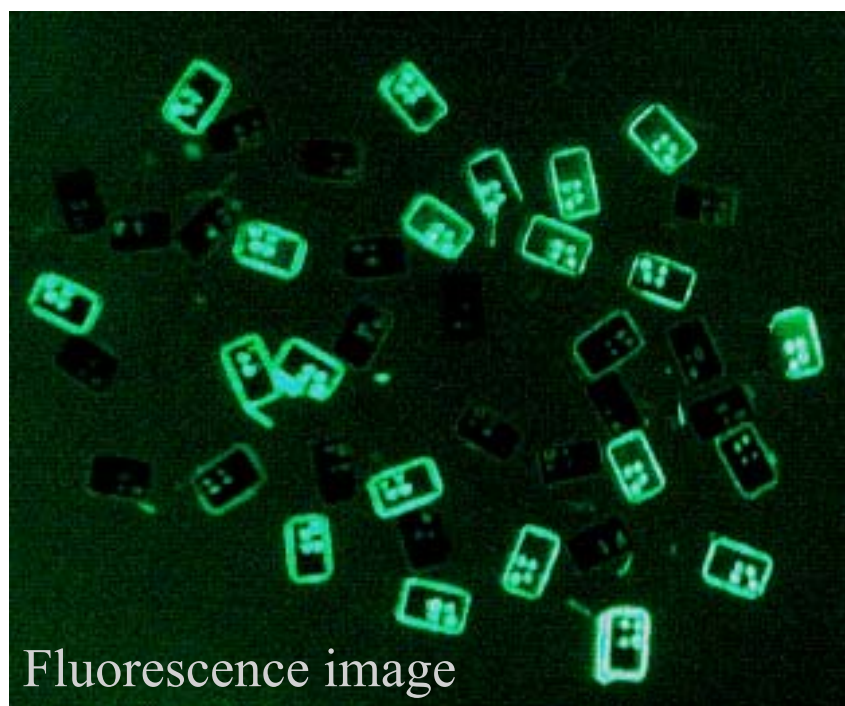
Electronic Supplementary Information: S1, process diagram for the microfabrication of encoded microparticles. S2, fluorescence signals on polymeric beads as a result of exposing to a 0.1 μM FITC-labelled target A. S3, enlarged views of the fluorescence and bright field images showing selective binding of a complementary DNA target (A) to the same encoded microparticles attached with the given DNA probe.



S1. Process diagram for the microfabrication of encoded microparticles. Cr (20 nm) and Cu (200 nm) were deposited by evaporation on glass slides (38×26 mm), ~ 15 μm of SU-8 photoresist (Microchem Corp., USA) was photolithographically patterned as the particle template on the substrate; Ni layers (~ 2 μm thick) were electrodeposited on the open areas of the photoresist-patterned microwells. SU-8 photoresist was then lift-off using SU-8 Remover PG solution. Finally, the particles were released from the underlying substrate by dissolution of the Cu sacrificial layer. Thousands of microparticles with a given code can be produced on a slide substrate within one processing cycle. Only three types of the encoded particles are shown here as examples.



S2. Fluorescence signals on polymeric beads as a result of exposure to a 0.1 μM FITC-labelled target A. The beads were treated with 10 $\mu\text{g}/\text{mL}$ avidin in 10 mM PBS buffer, and were subsequently treated with a 2% casein solution to block the exposed particle surface. (1) Control beads with no tagged probe were subjected to a treatment with 0.1 μM FITC-labelled target A. A strong nonspecific adsorption was shown for those beads even without attached probe. (2) A biotinylated DNA probe was attached onto the beads *via* biotin-avidin chemistry, the beads were exposed to 0.1 μM FITC-labelled target A. Polystyrene microspheres of 45 μm in diameter were obtained from Polysciences (USA).



S3. Enlarged views of the fluorescence and bright field images showing selective binding of a complementary DNA target (A) to the same encoded microparticles attached with the given DNA probe.
