Supplementary Information

Experimental Procedures

Preparation of the PDMS Films

Base Silicon Elastomer Sylgard 184 (Dow Corning, Midland, USA) and 10 weight% of the Curing Agent Sylgard 184 (Dow Corning, Midland, USA) were mixed. The viscous liquid was degassed under low pressure.

To make homogenous PDMS surfaces on a glass support a mixture of 1000 mg/ml PDMS prepolymer in n-heptane was spincoated (90 s with 2000 rpm and an acceleration of 435 rpm/s) on microscopy slides, which were cleaned with the RCA method before. The covered glass slides were cured in an oven for 12 h at 60°C.

The silicon-master used for producing structured PDMS films were obtained from GeSim (Großerkmannsdorf, Germany) and hydrophobized using Heptadecafluoro-1,1,2,2-tetrahydrodecyldimethylchlorsilane (ABCR Germany). The masters were covered with the pre-cured PDMS, degassed and cured for 12 h at 60°C, then the stamps were cut off from the master.

Preparation of the colloidal probe

We used tipless contact cantilevers (Micromash, Estonia) with different spring constants and tapping mode cantilevers, type NCH-W (Nanosensors., Switzerland) (25-42 N/m). At the apex of the cantilevers, glass beads were fixed using epoxy
glue (UHU Plus endfest 300) [29], using a micromanipulator.

Technical setup

In order to visualize the contact area and detect the transferred polyeclectrolyte ink the atomic-force microscope was mounted on an inverted optical microscope as reported in [31].

As an AFM we used a 'Nanowizard I' (JPK, Berlin, Germany). The spring constant of the contact cantilevers was determined by a method introduced by Sader[32]. In each case, the sensitivity of the setup was determined by recording a force curve on a hard glass substrate prior doing the printing step.

A Zeiss Axiovert 200 optical microscope was used in reflection interference contrast microscopy (RICM) and in fluorescence microscopy mode. As a light source a Hg-vapor lamp was used. A Zeiss Antiflex 63× NA 1.25 oil-immersion objective with suitable polarizers to avoid internal reflections was used for RICM and fluorescence microscopy and a Plan Apochromat 20 × only for fluorescence microscopy. The images were recorded by a Zeiss AxiocamHR highresolution monochromatic camera.
For RICM imaging, the sample was illuminated with monochromatic light (monochromater @ 576 nm) in reflection mode.

The excitation and the emission for the fluorescence microscopy measurements were filtered between 515-565 nm and 450-490 nm, respectively.

Printing of the colloid

Poly(allylamine-hydrochloride) (PAH, Mw = 70000 g/mol) were purchased from Aldrich. Rhodamine-B-isothiocyanate was purchased from Fluka. Rhodamine-B-isothiocyanate labelled PAH (RBITC-PAH) was prepared as described by Richter et. al.[33] based on Ibarz et. al.[34]

The structured or unstructured PDMS surfaces were inked with a 3.5 mg/ml solution of RBITC-PAH by dropping it on the surfaces. After incubation for 15 min. the samples were rinsed very quickly with water, dried in a nitrogen jet and mounted on the microscope. The probe was brought to contact with the inked PDMS surface, using the usual approach routine of the AFM. After selecting a certain load to be acting on the colloid, a single pull was made with a dwell time of 10 s, while keeping the force constant using the AFM feedback controlls. After retraction the transfer was checked by fluorescent microscopy. Using this procedure the printed area (contact area) can be controlled by varying the applied load.