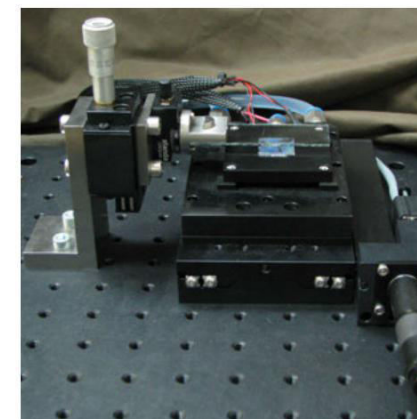
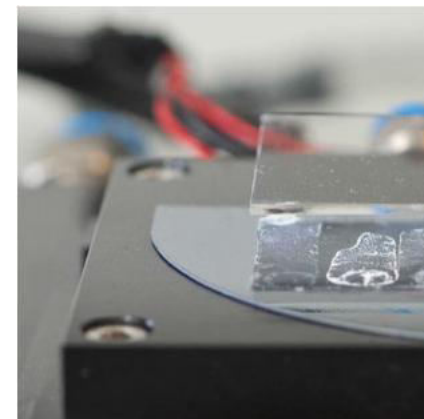


Micro and Nano-technologies



Capillary Deposition Stand for Micro-/Nano-Particles

[application areas]

Neat placing of micro- and nano-particles of various sizes in predetermined positions in macroscopic areas.

[year of invention] 2013.

[authors]

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[features, technical specifications]

Neat arrangement of multiple micro- or nano-particles by using regular nanomanipulation methods becomes an impossible task due to the duration of the process. Using capillary assisted deposition of particles from colloidal solutions on lithographically formed reliefs and selecting the appropriate application conditions allows to arrange particles very accurately and with high efficiency. The method is advanced that the position of the particles is determined by very accurate lithography methods. For example, electron lithography resolution is 10 nm, whereas process efficiency is ensured by the self-organization

of particles during capillary deposition. Reliefs can be replicated multiple times according to a formed impress by using polymer replicas, making the method very cheap. Two dimensional nanostructures of arranged nanoparticles can be used as elements of protection against counterfeiting, they can be used in photocatalytical applications or surface enhanced Raman scattering spectroscopy.

[novelty]

An efficient way to neatly arrange particles and form patterns. The use of fluorescing particles creates another level of freedom – a unique combination of colours which is nearly impossible to replicate.

[technological readiness level]

A model.

[what are we looking for in this stage of development?]

R&D orders related to the invention; partners from scientific institutions for joint research.

[patenting]

Patentability analysis required.

[commercialisation]

Yet to try.

[alternatives]

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[notes]

M. J. K. Klein, C. Kuemin, T. Tamulevičius, M. Manning, H. Wolf // Note: A microfluidic chip setup for capillarity-assisted particle assembly // Review of Scientific Instruments 83, 086109 (2012)
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