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Licensing Opportunity

TTO – Technology Transfer Office

Manufacturing of nanoscale orifices in glass like materials

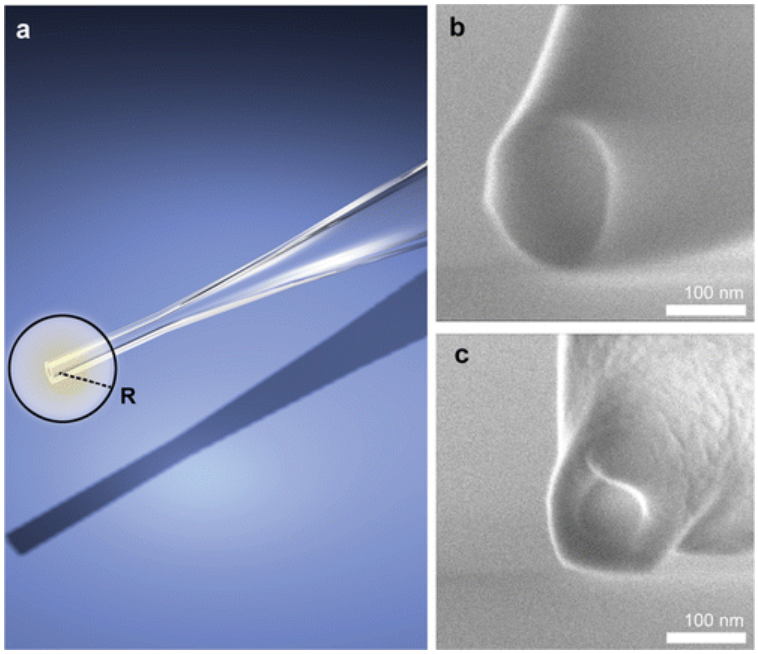

Figure 1. (a) Scheme of the conical end of the nanocapillary. The shaded area depicts the region, which is imaged by the SEM beam. The radius *R* is the penetration depth of the electron beam calculated by the theoretical penetration formula given by Kanaya–Okayama. (b) SEM in-lens image of a quartz nanocapillary magnified 196k times at a stage angle of 60 degrees to increase the three-dimensional perception. The electron high tension was at 3.0 kV, the beam current was at 171 pA, and the working distance was 3.3 mm. (c) Shrunken nanocapillary after 14 min of irradiation under constant angle and beam parameters.

Ref. Nr

6.1282

Keywords

Glass, nanopores nanocapillaries, cell counting, DNA sequencing

Intellectual Property

EP granted
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Publications

https://infoscience.epfl.ch/record/228172?ln=en

Nano Lett 2013 Apr 10;13(4):1717-23.

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Description

The technology solves the problem of manufacturing in a controllable manner nano-scale orifices in glass like materials with a tubular shape.

The orifices are shrunken by electron, ion or photon radiation. The shrink rate and pore size can be very precisely controlled and at the same imaged with an electron microscope (such as Field Emission Scanning electron Microscope.

Advantages

Precision in the manufacture of the nano-orifice of nanocapillaries

Applications

electron spray techniques, mass spectroscopy, patch clamping, scanning ion-conductance microscopy. fluorescent detection of molecules translocating through nanocapillaries, filter techniques, 3D and 2D printing technique, capillary electrophoresis, combination of nanocapillaries with optical tweezers, cell surgery …