

Title (en)

CONTROLLING NANOBUBBLE AND NANOPARTICLE DYNAMICS IN CONICAL NANOPORES

Title (de)

STEUERUNG VON NANOBLASEN- UND NANOPARTIKEL-DYNAMIKEN IN KONISCHEN NANOPOREN

Title (fr)

CONTRÔLE DE LA DYNAMIQUE DE NANOBULLES ET DE NANOPARTICULES DANS DES NANOPORES CONIQUES

Publication

EP 2986975 A4 20161130 (EN)

Application

EP 14785203 A 20140417

Priority

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- US 2014034558 W 20140417

Abstract (en)

[origin: WO2014172574A1] Systems and methods for detect, manipulate and characterize nanobubbles and nanoparticles in solution. These comprise use of a conical-shaped nanopore having a nanoparticle or nanobubble sensing zone configured to be in communication with a saline solution, and having a half-cone angle sufficiently small to provide for significant channel-like character at the nanopore. An electrode(s) is used to apply a voltage/potential across the nanopore to provide electrophoretic force (EPF) across the nanopore, the nanopore is subjected to an electroosmotic force (EOF), pressure is applied/adjusted across the nanopore, and wherein adjusting at least one parameter selected from the group consisting of EPF, EOF, and pressure across the nanopore, provides for fine control of particle or nanobubble translocation velocities across the sensing zone of the nanopore (e.g., by shifting the zero velocity point to an applied voltage/potential to provide for an acceptable signal-to-noise ratio).

IPC 8 full level

G01N 27/26 (2006.01); **B23P 11/00** (2006.01); **C12Q 1/06** (2006.01)

CPC (source: EP)

G01N 33/48721 (2013.01)

Citation (search report)

- [XII] SEAN R. GERMAN ET AL: "Controlling Nanoparticle Dynamics in Conical Nanopores", JOURNAL OF PHYSICAL CHEMISTRY C, vol. 117, no. 1, 3 December 2012 (2012-12-03), US, pages 703 - 711, XP055309708, ISSN: 1932-7447, DOI: 10.1021/jp310513v
- [A] ANDREW MALLOY: "Count, size and visualize nanoparticles", MATERIALS TODAY, vol. 14, no. 4, 30 April 2011 (2011-04-30), pages 170 - 173, XP055309698
- See references of WO 2014172574A1

Cited by

WO2020079020A1; WO2020079032A1; WO2023202990A1; EP4299531A1

Designated contracting state (EPC)

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DOCDB simple family (application)

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