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(54) Title: CONTINUOUS BIOMOLECULE SEPARATION IN A NANOFILTER

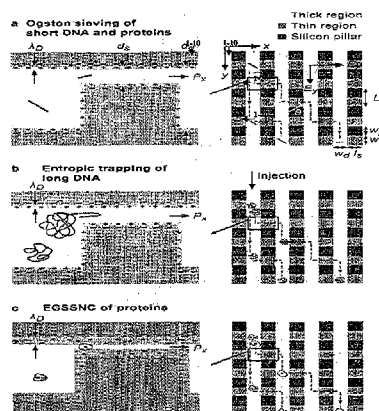


Figure 1

(57) Abstract: This invention provides a method and an apparatus for quickly continuously fractionating biomolecules, such as DNAs, proteins and carbohydrates by taking advantage of differential bidirectional transport of biomolecules with varying physico-chemical characteristics, for example size, charge, hydrophobicity, or combinations thereof, through periodic arrays of microfabricated nanofilters. The passage of biomolecules through the nanofilter is a function of both steric and electrostatic interactions between charged macromolecules and charged nanofilter walls. Continuous-flow separation through the devices of this invention are applicable for molecules varying in terms of any molecular properties (e.g., size, charge density or hydrophobicity) that can lead to differential transport across the nanofilters.

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A. CLASSIFICATION OF SUBJECT MATTER

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USPC: 209/2

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 209/2, 450, 600-606

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6,027,623 (Ohkawa) 22 February 2000 (02.22.2000) US 6,110,339 (Yager et al) 29 August 2000 (08.29.2000) US 6,881,317 B2 (Huang et al) 19 April 2005 (04.19.2005)	1-38



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