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[Continued on next page]

(54) Title: DEVICE AND METHODS FOR PERFORMING SIZE EXCLUSION CHROMATOGRAPHY

(57) Abstract: The present invention is directed to a device and a method for performing size exclusion chromatography. Embodiments of the present invention feature devices and methods for size exclusion chromatography at normal high performance liquid chromatography or ultra performance liquid chromatography pressures and above using small particles.

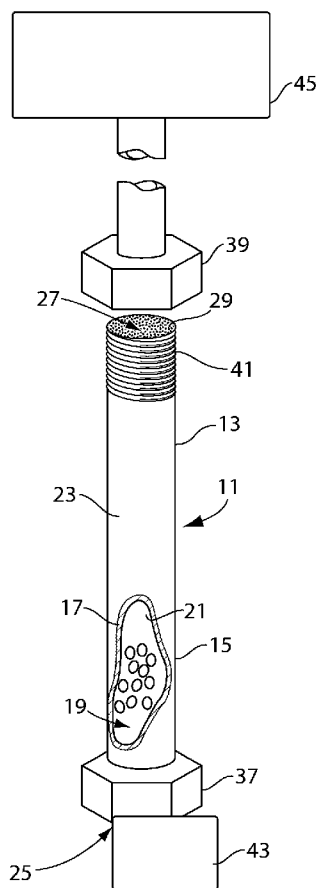


Fig. 1





(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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<p>A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - B01D 15/34 (2011.01) USPC - 210/635 According to International Patent Classification (IPC) or to both national classification and IPC</p>																			
<p>B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) USPC: 210/635 IPC: B01D 15/34 (2011.01)</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC: 210/198.2, 635 IPC: B01D 15/34 (2011.01) (keyword limited; terms below)</p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PubWEST(USPT,PGPB,EPAB,JPAB); Google; Google Patents Search Terms: chromatography, micron, core, free valance, polymer analyte, silica, metal oxide, hydroxyl, light scattering, particulate, particle, pressure, biopolymer, monolith, stationary phase</p>																			
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p> <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X Y</td> <td>US 2006/0144770 A1 (Granger et al.) 06 July 2006 (06.07.2006) para [0002]-[0003]; [0010]; [0012]; [0019]-[0020]; [0026]; [0028]; [0039]; [0042]-[0049]; [0073]; [0076]; [0089]; [0091];</td> <td>1-6, 10-21, 23-51 ----- 54-55</td> </tr> <tr> <td>X</td> <td>US 2009/0277838 A1 (Liu et al.) 12 November 2009 (12.11.2009) para [0011]-[0013]; [048]; [0087]; [0094]; [0108]-[0110]; [0132]; [0223]</td> <td>1, 7-9, 20-21</td> </tr> <tr> <td>X</td> <td>US 6,491,823 B1 (Safir et al.) 10 December 2002 (10.12.2002) col 9, ln 5-15; col 14, ln 42 to col 15, ln 19; col 27, ln 26-38; col 34, ln 19-35; col 35, ln 3-27;</td> <td>1, 22, 40, 47, 52-53</td> </tr> <tr> <td>Y</td> <td>US 5,250,186 A (Dollinger et al) 05 October 1993 (05.10.1993) col 4, ln 29-35</td> <td>54-55</td> </tr> <tr> <td>X</td> <td>US 3,808,125 A (Good) 30 April 1974 (30.14.1974) col 2, ln 47-72; col 4, ln 21-73</td> <td>1, 25</td> </tr> </tbody> </table>		Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X Y	US 2006/0144770 A1 (Granger et al.) 06 July 2006 (06.07.2006) para [0002]-[0003]; [0010]; [0012]; [0019]-[0020]; [0026]; [0028]; [0039]; [0042]-[0049]; [0073]; [0076]; [0089]; [0091];	1-6, 10-21, 23-51 ----- 54-55	X	US 2009/0277838 A1 (Liu et al.) 12 November 2009 (12.11.2009) para [0011]-[0013]; [048]; [0087]; [0094]; [0108]-[0110]; [0132]; [0223]	1, 7-9, 20-21	X	US 6,491,823 B1 (Safir et al.) 10 December 2002 (10.12.2002) col 9, ln 5-15; col 14, ln 42 to col 15, ln 19; col 27, ln 26-38; col 34, ln 19-35; col 35, ln 3-27;	1, 22, 40, 47, 52-53	Y	US 5,250,186 A (Dollinger et al) 05 October 1993 (05.10.1993) col 4, ln 29-35	54-55	X	US 3,808,125 A (Good) 30 April 1974 (30.14.1974) col 2, ln 47-72; col 4, ln 21-73	1, 25
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<p>Date of the actual completion of the international search 02 February 2011 (02.02.2011)</p>	<p>Date of mailing of the international search report 28 FEB 2011</p>																		
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