6158-7

PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : A61M 1/00, 27/00 — A1

(11) International Publication Number: **WO 99/65542**

(43) International Publication Date: 23 December 1999 (23.12.99)

(21) International Application Number: PCT/US99/11020

(22) International Filing Date: 18 May 1999 (18.05.99)

(30) Priority Data:
09/099,269 18 June 1998 (18.06.98) US

(71) Applicant: 3M INNOVATIVE PROPERTIES COMPANY [US/US]; 3M Center, P.O. Box 33427, Saint Paul, MN 55133-3427 (US).

(72) Inventors: INSLEY, Thomas, I.; P.O. Box 33427, Saint Paul, MN 55133-3427 (US). JOHNSTON, Raymond, P.; P.O. Box 33427, Saint Paul, MN 55133-3427 (US). KNOLL, Randall, L.; P.O. Box 33427, Saint Paul, MN 55133-3427 (US).

(74) Agents: ROGERS, James, A. et al.; 3M Innovative Properties Company, Office of Intellectual Property Counsel, P.O. Box 33427, Saint Paul, MN 55133-3427 (US).

(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published
With international search report.

(54) Title: MICROCHANNELED ACTIVE FLUID TRANSPORT DEVICES

(57) Abstract

An active fluid transport device (10, 40, 54, 60) that includes a layer (12) of polymeric material. The layer (12) has a structured surface (13) that includes a plurality of substantially discrete flow channels (16). The flow channels (16) have a minimum aspect ratio of about 10 to 1 and a hydraulic radius no greater than about 300 micrometers. The device may also include a connector (20, 55) that allows a potential source (14) external to the structured surface (13) to be placed in fluid communication with the discrete flow channels (16). The potential source (14) promotes fluid movement through the flow channels (16) from a first location to a second location.

