PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 : H01L 21/316, C23C 16/40 — A1

(11) International Publication Number: **WO 00/02241**

(43) International Publication Date: 13 January 2000 (13.01.00)

(21) International Application Number: PCT/US99/15032

(22) International Filing Date: 1 July 1999 (01.07.99)

(30) Priority Data:
09/111,083 7 July 1998 (07.07.98) US

(71) Applicant: ALLIEDSIGNAL INC. [US/US]; 101 Columbia Road, P.O. Box 2245, Morristown, NJ 07962–2245 (US).

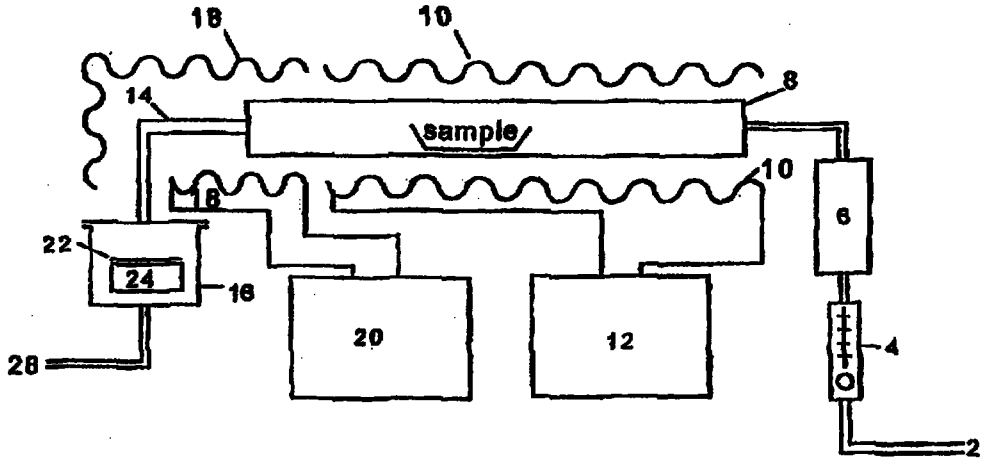
(72) Inventors: SMITH, Douglas, M.; 215 Richmond S.E., Albuquerque, NM 87106 (US). RAMOS, Teresa; 7517 El Morro, N.E., Albuquerque, NM 87109 (US). RODERICK, Kevin, H.; 3808 Lafayette, N.E., Albuquerque, NM 87107 (US).

(74) Agents: CRISS, Roger, H. et al.; AlliedSignal Inc., Law Dept. (Amy Olinger), 101 Columbia Road, P.O. Box 2245, Morristown, NJ 07962–2245 (US).

(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, 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, 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.
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: VAPOR DEPOSITION ROUTES TO NANOPOROUS SILICA



(57) Abstract

A process for the manufacture of nanoporous silica dielectric films by vapor deposition of silica precursors on a substrate. The process provides for vaporizing at least one alkoxysilane composition; depositing the vaporized alkoxysilane composition onto a substrate; exposing the deposited alkoxysilane composition to a water vapor, and either an acid or a base vapor; and drying the exposed alkoxysilane composition, thereby forming a relatively high porosity, low dielectric constant, silicon containing polymer composition on the substrate.