



(51) International Patent Classification:

C04B 35/52 (2006.01) C22C 26/00 (2006.01)
C04B 35/626 (2006.01) C04B 35/624 (2006.01)
C04B 35/628 (2006.01)

(21) International Application Number:

PCT/US2013/021630

(22) International Filing Date:

16 January 2013 (16.01.2013)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/587,043 16 January 2012 (16.01.2012) US

(71) Applicant: NATIONAL OILWELL DHT, L.P.

[US/US]; 500 Conroe Park West Drive, Conroe, Texas 77303 (US).

(72) Inventors; and

(71) Applicants : NIXON, Michael S. [US/US]; 47 W. Palmer Bend, The Woodlands, Texas 77381-5403 (US). ZHAN,

Guodong [US/US]; 28415 Lauren Cove Lane, Spring, Texas 77386-1847 (US). HUGHES, Michael D. [US/US]; 201 River Pointe Drive, Apt. # 411, Conroe, Texas 77304-2908 (US). KUMAR, Anil [US/US]; 116 David Forest Lane, Conroe, Texas 77384-3737 (US).

(74) Agent: FALESKI, Thaddeus J.; CONLEY ROSE, P.C., 1001 McKinney, Suite 1800, Houston, Texas 77002 (US).

(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, BN, 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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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.

[Continued on next page]

(54) Title: PREPARATION OF NANOCRYSTALLINE DIAMOND COATED DIAMOND PARTICLES AND APPLICATIONS THEREOF

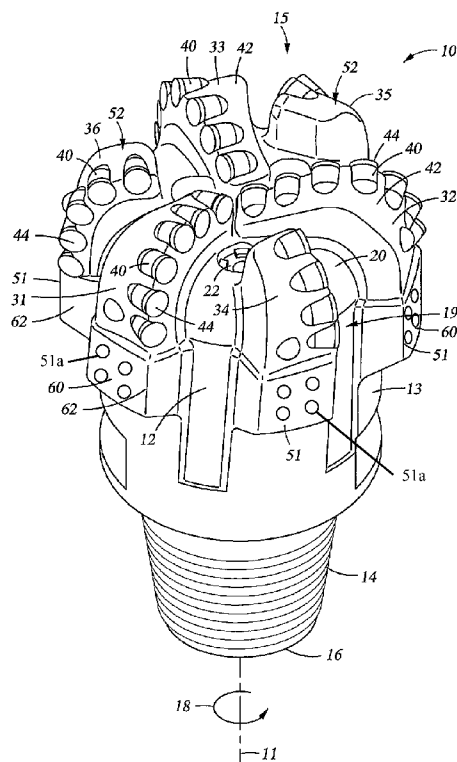


FIGURE 1

(57) Abstract: A method of making a polycrystalline diamond cutter element includes forming a blend, comprising a first particle size of polycrystalline diamond particles and a second particle size of polycrystalline diamond particles; forming a suspension of nanocrystalline diamond particles suspended in a solvent; and mixing the blend into the suspension to form a polycrystalline diamond mixture comprising nanocrystalline diamond coated polycrystalline diamond particles. The mixture is sintered with a substrate at high temperature and high pressure to form the polycrystalline diamond cutter element.



(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, 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).

Published:

— *with international search report (Art. 21(3))*