

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
26 April 2007 (26.04.2007)

PCT

(10) International Publication Number
WO 2007/045089 A1

(51) International Patent Classification:

B05B 7/20 (2006.01) **B05B 7/24** (2006.01)
B05B 17/04 (2006.01)

(21) International Application Number:

PCT/CA2006/001713

(22) International Filing Date: 17 October 2006 (17.10.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/726,614 17 October 2005 (17.10.2005) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, 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, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, 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 receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: REACTIVE SPRAY FORMATION OF COATINGS AND POWDERS

(57) Abstract: An apparatus and method for open-atmosphere flame based spraying employs a nozzle to preheat, pressurize and atomize a mechanically pumped reactive and flammable liquid solution through a small orifice or a nozzle and then a set of pilot flames to combust the spray. The liquid feedstock is preheated to a supercritical temperature before reaching the nozzle and is pressurized before spraying due to a reduced size of the outlet port of the feedstock flow channel relative to the inlet. A supplementary collimating, or sheathing, gas is supplied to the flow channel of the feedstock and both the feedstock and the supplementary gas are uniformly heated before spraying. This arrangement helps to avoid clogging of the nozzle and results in satisfactory control of the properties of the particulate products of the spraying procedure.



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