

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
13 March 2003 (13.03.2003)

PCT

(10) International Publication Number
WO 03/021018 A1

- (51) International Patent Classification⁷: **D01F 9/12**
- (21) International Application Number: PCT/US02/27838
- (22) International Filing Date: 31 August 2002 (31.08.2002)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/316,550 31 August 2001 (31.08.2001) US
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- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, 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, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— *with international search report*
- 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.*



WO 03/021018 A1

(54) Title: METHOD FOR COMBUSTION SYNTHESIS OF FULLERENES

(57) Abstract: A mod of combustion and a multi-component reactor to accomplish this mode of combustion are disclosed which produces fullerenes and fullerenic material by combustion. This mode consists of de-coupling an oxidation region of a flame from a post-flame region, thus giving greater control over operating parameters, such as equivalence ratio, temperature, and pressure ; allows conditions of the operating parameters of the combustion reaction to be attained which would not be easily attained by conventional methods ; and offers the ability to more easily stabilize the combustion reactions to allow for higher throughputs of fuel and oxidant. Several embodiments of a primary zone of a multi-component reactor are also disclosed. Said primary zone serves as the oxidation region, operates on the principle of providing recycle to the reacting combustion mixture, and which may be operated as approximately a well-mixed reactor. A secondary zone is also disclosed which provides further residence time for reaction and the ability to control operating parameters, operates on the principle of minimizing recycle of the reacting combustion mixture. The secondary zone may be operated as approximately a plug-flow reactor. The primary and secondary zones may be operated in conjunction or either one alone.