

CORRECTED VERSION

(19) World Intellectual Property
Organization
International Bureau



(10) International Publication Number
WO 2011/146852 A8

(43) International Publication Date
24 November 2011 (24.11.2011)

- (51) International Patent Classification:
A61K 9/12 (2006.01) *A61K 9/14* (2006.01)
A61K 47/32 (2006.01)
- (21) International Application Number:
PCT/US2011/037363
- (22) International Filing Date:
20 May 2011 (20.05.2011)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
61/347,062 21 May 2010 (21.05.2010) US
- (71) Applicants (for all designated States except US): **PRESIDENT AND FELLOWS OF HARVARD COLLEGE** [US/US]; 17 Quincy Street, Cambridge, MA 02138 (US). **BASF SE** [DE/DE]; Gks/b - B001, 67056 Ludwigshafen (DE).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **LADAVAC, Kosta** [RU/US]; 31 Walnut Street, #1, Somerville, MA 02143 (US). **GUERRA, Rodrigo, E.** [CL/US]; 104 Western Avenue, #2, Cambridge, MA 02139 (US). **KAZ, David** [US/US]; 24 Beacon Place, #3, Somerville, MA 02143 (US). **MANOHARAN, Vinotham** [US/US]; 18 Banks Street, #506, Cambridge, MA 02138 (US). **RIEGER, Jens, B.** [DE/DE]; Brunckstrasse 19, 67063 Ludwigshafen (DE). **KOLTZENBURG, Roland, Sebastian** [DE/DE]; Pommernstrasse 7, 67125 Dannstadt (DE). **WEITZ, David, A.** [US/US]; 213 Green Road, Bolton, MA 01740 (US).
- (74) Agent: **OYER, Timothy, J.**; Wolf, Greenfield & Sacks, P.C., 600 Atlantic Avenue, Boston, MA 02210-2206 (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, 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, PE, PG, PH, PL, PT, RO, RS, RU, 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.

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

(88) Date of publication of the international search report:
5 July 2012

(48) Date of publication of this corrected version:
7 March 2013

(15) Information about Correction:
see Notice of 7 March 2013

(54) Title: FOAMS OR PARTICLES FOR APPLICATIONS SUCH AS DRUG DELIVERY

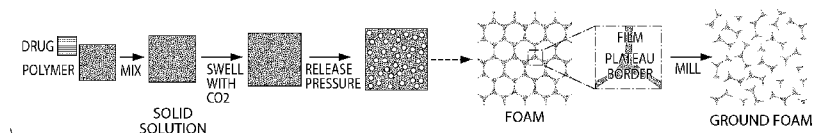


Fig. 1A

(57) Abstract: The present invention generally relates to foams and, in particular, to foams for applications such as drug delivery, and particles that are made from such foams. One aspect relates to foams or particles containing pharmaceutically active agents. The foam may comprise a pharmaceutically acceptable polymeric carrier. In some cases, the foam or particle has an unexpectedly high specific surface area. A high specific surface area may, in some cases, facilitate delivery or release of the pharmaceutically active agent when the foam or particles made from the foam (e.g., by milling) are administered to a subject. The foam may also exhibit a relatively high loading of the pharmaceutically active agent. In some cases, the foam may be a microcellular foam. In one set of embodiments, the foam is created using a supercritical fluid, such as supercritical CO₂. For example, a precursor to the foam, containing a pharmaceutically active agent, may be mixed with a foaming agent, then the pressure decreased to cause the foaming agent to expand, thereby causing a foam to form. The foam may then be subsequently ground or milled, or otherwise processed to form particles.



WO 2011/146852 A8