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(54) **Title:** COMPLEXOMETRIC PRECURSOR FORMULATION METHODOLOGY FOR INDUSTRIAL PRODUCTION OF HIGH PERFORMANCE FINE AND ULTRAFINE POWDERS AND NANOPOWDERS FOR SPECIALIZED APPLICATIONS

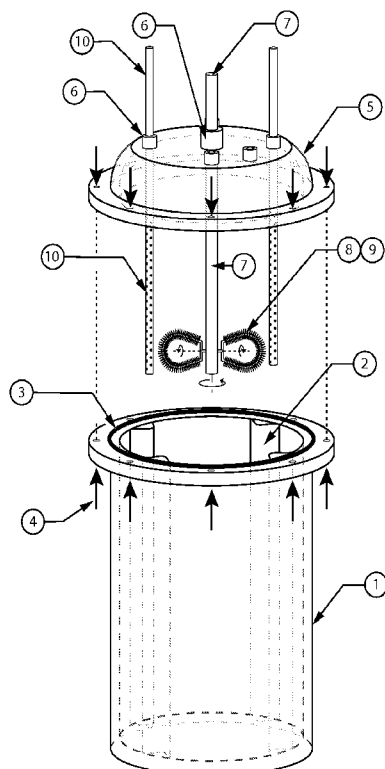


Figure 4

(57) **Abstract:** A method of forming a powder M_jX_p wherein M_i is a positive ion or several positive ions selected from alkali metal, alkaline earth metal or transition metal; and X_p is a monoatomic or a polyatomic anion selected from Groups IIA, IVA, VA, VIA or VIIA; called complexometric precursor formulation or CPF. The method includes the steps of: providing a first reactor vessel with a first gas diffuser and an first agitator; providing a second reactor vessel with a second gas diffuser and a second agitator; charging the first reactor vessel with a first solution comprising a first salt of M_j ; introducing gas into the first solution through the first gas diffuser, charging the second reactor vessel with a second solution comprising a salt of X_p ; adding the second solution to the first solution to form a complexcelle; drying the complexcelle, to obtain a dry powder; and calcining the dried powder of said M_iX_p .



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- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

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A. CLASSIFICATION OF SUBJECT MATTER

H01M 4/52(2010.01)i, C01B 25/26(2006.01)i, C01B 25/30(2006.01)i, C01B 32/60(2017.01)i, C01B 33/20(2006.01)i, C01B 33/26(2006.01)i, C01D 1/00(2006.01)i, C01D 3/00(2006.01)i, C01D 5/00(2006.01)i, C01D 7/00(2006.01)i

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

H01M 4/52; C01B 25/26; B22F 3/00; B22F 9/06; G02B 6/13; H01M 4/58; C01B 25/30; C01B 32/60; C01B 33/20; C01B 33/26; C01D 1/00; C01D 3/00; C01D 5/00; C01D 7/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: ceramic powder, inorganic powder, ultrafine powder, bubble surface, lithium metal oxide, calcium phosphate, lithium aluminosilicate, lithium aluminate, lithium metal phosphate, gas diffuser, complex

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2002-0192137 A1 (CHALONER-GILL, BENJAMIN et al.) 19 December 2002 See paras. [0071]-[0075], [0118]-[0129]; claims 39-47; and figs. 1, 2.	1-35
A	JP 2010-076014 A (TOSHIBA CORPATION) 08 April 2010 See paras. [0009]-[0012]; and claims 1-11.	1-35
A	ZHU, CHONGQIANG et al., "High performances of ultrafine and layered LiCoO ₂ powders for lithium batteries by a novel sol-gel process", Journal of Alloys and Compounds, 2010, Vol. 496, No. 1, pages 703-709 See abstract; pages 704, 708.	1-35
A	WOHLRAB, SEBASTIAN et al., "Synthesis of MnO ₃ nanoparticles (M= Li, Na, K)", Chemistry of Materials, 2006, Vol. 18, No. 18, pages 4227-4230 See pages 4227, 4228; and scheme 1.	1-35
A	KR 10-2011-0056133 A (INSTITUTE FOR RESEARCH & INDUSTRY COOPERATION, BUSAN NATIONAL UNIVERSITY) 26 May 2011 See paras. [0005]-[0013]; and claims 1-20.	1-35



Further documents are listed in the continuation of Box C.



See patent family annex.

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