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— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

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

Published:

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

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(54) **Title**: FRACTURING FLUIDS AND METHODS OF TREATING HYDROCARBON FORMATIONS

(57) **Abstract**: A method of fracturing a subterranean formation penetrated by a well comprises: forming a fracturing composition comprising a carrier fluid; and a superabsorbent polymer component comprising one or more of the following: a first composite of a proppant and a first superabsorbent polymer in an unhydrated form, the first superabsorbent polymer being at least partially embedded in a void area of the proppant; a coated superabsorbent polymer; a superabsorbent material having a three-dimensional network; or a second composite of a second superabsorbent polymer and a slow-release breaker; and pumping the hydraulic fracturing composition into the subterranean formation to create or enlarge a fracture.

INTERNATIONAL SEARCH REPORT

International application No.
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A. CLASSIFICATION OF SUBJECT MATTER

C09K 8/02(2006.01)i, C09K 8/04(2006.01)i, C09K 8/80(2006.01)i, E21B 43/267(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
C09K 8/02; E21B 33/138; C09K 8/68; C09K 8/90; E21B 43/26; C09K 8/70; C09K 8/04; C09K 8/80; E21B 43/267

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: fracturing, well, superabsorbent polymer, breaker, temperature, encapsulated activator

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2009-0221453 A1 (MUKHOPADHYAY, SUMITRA et al.) 3 September 2009 See claims 1, 7, 15, 22; and paragraphs [0012], [0026]-[0028], [0031], [0032], [0035], [0049], [0060].	1-5,7-9
Y		6,10-15
Y	US 2010-0252264 A1 (HUTCHINS, RICHARD D. et al.) 7 October 2010 See claims 4-5, 20; and paragraph [0008].	6,10-11
Y	US 5441109 A (GUPTA, D. V. SATYANARAYANA et al.) 15 August 1995 See claim 1.	12-15
A	US 2009-0082228 A1 (PARRIS, MICHAEL D. et al.) 26 March 2009 See claims 4, 23.	1-15
A	US 5806597 A (TJON-JOE-PIN, ROBERT et al.) 15 September 1998 See abstract; and claim 1.	1-15

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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