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[Continued on next page]

(54) Title: TWO DIMENSIONAL T1/T2APP-T2APP PROCESSING OF MULTI-GRADIENT NMR DATA

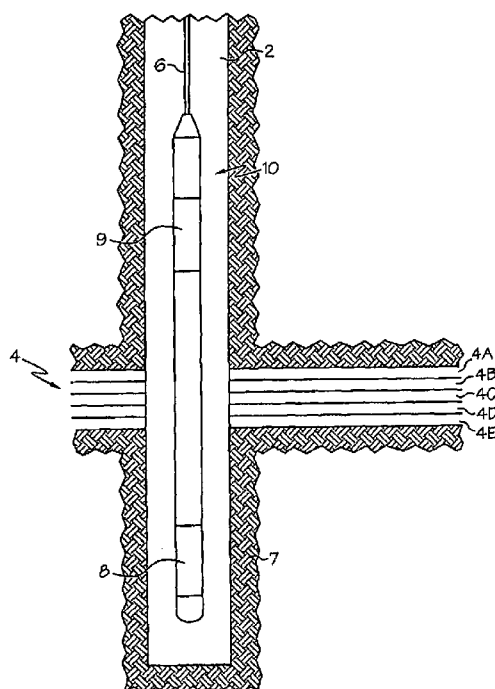


FIG. 1

(57) Abstract: A method for estimating a property of a material, the method including: acquiring data using nuclear magnetic resonance (NMR) measurements, the measurements performed by varying at least one of a magnetic field gradient (G) and an inter-echo time (TE); organizing the data according to at least one of magnetic field gradients (G) and inter-echo times (TE) used in the NMR measurements; calculating a shift of apparent transverse relaxation time ($T_{2,app}$) and (longitudinal relaxation time T_1) / (apparent transverse relaxation time $T_{2,app}$) due to a variation of the product of G and TE; constructing a mathematical model of the NMR measurements from the shifts; and inverting the mathematical model to estimate the property.



OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,
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INTERNATIONAL SEARCH REPORT

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PCT/US2009/032612**A. CLASSIFICATION OF SUBJECT MATTER***G01V 3/32(2006.01)i, E21B 49/00(2006.01)i, G01N 24/08(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)

IPC G01V, G01N

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 since 1975

Japanese utility models and applications for utility models since 1975

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

eKOMPASS(KIPO internal)

Keywords: NMR, magnetic field gradient, inter-echo time, relaxation time

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 07298142 B2 (GABOR G. HURSAN et al.) 20 November 2007 See abstract, all claims, and all figs	1-20
A	US 2005/0162162 A1 (GREGORY ITSKOVICH et al.) 28 July 2005 See abstract, all claims, and all figs	1-20
A	US 2005/0272158 A1 (JAMES E. GALFORD et al.) 08 December 2005 See abstract, all claims, and all figs	1-20
A	US 2007/0032956 A1 (MARTIN BLANZ et al.) 08 February 2007 See abstract, all claims, and all figs	1-20



Further documents are listed in the continuation of Box C.



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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 07298142 B2	20.11.2007	AU 2006-261780 A1 CA 2613216 A1 CN 101283291 A CN 101283291 A0 GB 0724941 D0 GB 2443346 A NO 20080087 B US 2006-0290350 A1 WO 2007-002678 A2 WO 2007-002678 A3	22.06.2006 04.01.2007 08.10.2008 08.10.2008 30.01.2008 30.04.2008 17.03.2008 28.12.2006 04.01.2007 04.01.2007
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US 2005-0272158 A1	08.12.2005	US 07176682 B2	13.02.2007
US 2007-0032956 A1	08.02.2007	NONE	