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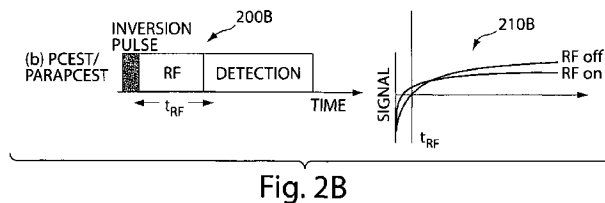
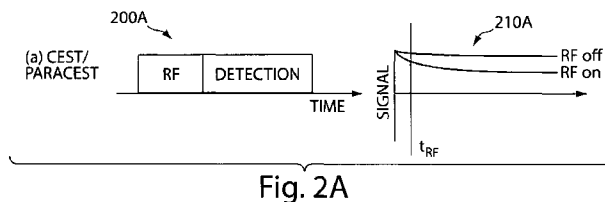
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[Continued on next page]

(54) Title: POSITIVE MAGNETIC RESONANCE IMAGING CONTRAST METHODS AND APPARATUS USING CHEMICAL EXCHANGE SATURATION TRANSFER



(57) Abstract: In one aspect, an apparatus for performing chemical exchange saturation transfer (CEST) magnetic resonance imaging on a region of an object being imaged is provided. The method comprises at least one coil capable of being operated to emit radio frequency (RF) signals, at least one detector capable of detecting nuclear magnetic resonance signals, and at least one controller to operate the at least one coil to provide at least one inversion sequence to the region to flip at least some spins in the region by a desired flip-angle, operate the at least one coil to provide at least one first pulse sequence at a first frequency offset from a peak resonant frequency of water by a first amount in a first direction to magnetize at least one exchange group in the region, operate the at least one coil to provide at least one second pulse sequence at a second frequency offset from the peak resonant frequency of water by the first amount in a second direction opposite the first direction, operate the at least one detector to measure a first signal emitted from the region as a result of providing the at least one first pulse sequence after a predetermined time interval after applying the first inversion sequence, and operate the at least one detector to measure a second signal emitted from the region as a result of providing the at least one second sequence at the predetermined time interval after applying the at least one inversion sequence, wherein the predetermined time interval is selected such that positive contrast is achieved with respect to the first signal relative to the second signal.



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A. CLASSIFICATION OF SUBJECT MATTER*A61B 5/055(2006.01)i, G05F 1/00(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 8 : A61B, G05F

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 : "CEST", "MRI", "positive", "inversion" and "sequence"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6,850,793 B1 (MIYAZAKI, M. et al.) 1 February 2005 See abstract, column 2, line 42 - column 4, line 67, claims 1-10, and figures 1-31.	1-21
A	US 2002-0188190 A1 (KASSAI, Y. et al.) 12 December 2002 See abstract, claims 1-55, and figures 1-25.	1-21
A	US 2007-0134159 A1 (DIXON, W. T. et al.) 14 June 2007 See abstract, claims 1-22, and figures 1-6.	1-21
A	US 2004-0061496 A1 (OOKAWA, M.) 1 April 2004 See abstract, claims 1-16, and figures 1-5.	1-21

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

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Information on patent family members

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