

Title (en)
METHOD FOR EXAMINING THE NUCLEAR MAGNETIC RESONANCE IN A SAMPLE AND DEVICE FOR CARRYING OUT THE METHOD

Title (de)
VERFAHREN ZUR UNTERSUCHUNG DER KERNSPINRESONANZ IN EINER PROBE UND VORRICHTUNG ZUR DURCHFÜHRUNG DES VERFAHRENS

Title (fr)
PROCÉDÉ D'ANALYSE DE LA RÉSONANCE MAGNÉTIQUE NUCLÉAIRE DANS UN ÉCHANTILLON ET DISPOSITIF PERMETTANT DE METTRE EN ŒUVRE LEDIT PROCÉDÉ

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Abstract (en)
[origin: WO2011020590A1] The present invention relates to a method for examining the nuclear magnetic resonance in a sample volume located in a measuring volume and to a device for carrying out the method. By means of an excitation laser, a packet of laser pulses is created, which then acts on the measuring volume when a quasi-static magnetic field occurs therein. If the resonance conditions for nuclear spins contained therein are fulfilled, the sample volume emits a response signal that is received by a detector. The quasi-static magnetic field occurring within the measuring volume is provided as follows: i) the measuring volume is acted on by a low-frequency laser beam, the wavelength of which exceeds the wavelength of the excitation laser by at least 102. Thus a periodically variable magnetic field is created in the measuring volume. The amplitude of said field is at least 90% of the maximum thereof in the measuring volume; or ii) the measuring volume is acted on by a high-frequency laser beam, the frequency of which exceeds the frequency of the excitation laser by at least 102. The laser beam is subjected to rectification before acting on the measuring volume. Thus a quasi-static magnetic field is created in the measuring volume, having an effective mean constant flux density over at least 10 periods, wherein the spatial and time average of the flux density are not equal to zero.

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