

Title (en)

NMR METHOD AND DEVICE WITH MAGIC-ANGLE SPINNING AT A VERY LOW TEMPERATURE

Title (de)

NMR-VERFAHREN SOWIE VORRICHTUNG MIT MAGIC-ANGLE-SPINNING BEI SEHR NIEDRIGEN TEMPERATUREN

Title (fr)

PROCEDE ET DISPOSITIF RMN AVEC ROTATION A L'ANGLE MAGIQUE A TRES BAS TEMPERATURE

Publication

**EP 2791693 A1 20141022 (FR)**

Application

**EP 12806404 A 20121211**

Priority

- FR 1161510 A 20111213
- EP 2012075088 W 20121211

Abstract (en)

[origin: WO2013087626A1] The invention relates to a method for the NMR analysis of a solid sample arranged in a sample holder (21), characterized in that it includes the following steps: generating a plurality of high-pressure gas streams (2, 3, 4) from at least a first high-pressure gas source (1); cooling the gas streams (2, 3, 4) in at least one heat exchanger (12) using cooling gas from a second gas source (11); spinning the sample holder (21) using a first high-pressure cooled gas stream (2) and cooling the sample holder (21) using a second high-pressure cooled gas stream (3).

IPC 8 full level

**G01R 33/31** (2006.01); **G01R 33/30** (2006.01)

CPC (source: EP US)

**G01N 24/08** (2013.01 - US); **G01R 33/305** (2013.01 - EP US); **G01R 33/307** (2013.01 - EP US); **G01R 33/31** (2013.01 - EP US)

Citation (search report)

See references of WO 2013087626A1

Citation (examination)

EP 0916890 A2 19990519 - AIR PROD & CHEM [US]

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

**FR 2983959 A1 20130614**; **FR 2983959 B1 20151225**; EP 2791693 A1 20141022; US 2015177341 A1 20150625; US 9995802 B2 20180612; WO 2013087626 A1 20130620

DOCDB simple family (application)

**FR 1161510 A 20111213**; EP 12806404 A 20121211; EP 2012075088 W 20121211; US 201214364853 A 20121211