Title (en)

METHOD AND DEVICE FOR SELECTIVELY DETECTING FERROMAGNETIC OR SUPERPARAMAGNETIC PARTICLES

Title (de)

VERFAHREN UND VORRICHTUNG ZUM SELEKTIVEN NACHWEIS FERROMAGNETISCHER ODER SUPERPARAMAGNETISCHER PARTIKEL

Title (fr)

PROCEDE ET DISPOSITIF DE DETECTION SELECTIVE DE PARTICULES FERROMAGNETIQUES OU SUPRAPARAMAGNETIQUES

Publication

EP 1597573 A1 20051123 (DE)

Application

EP 04706604 A 20040130

Priority

- DE 2004000149 W 20040130
- DE 10309132 A 20030228

Abstract (en)

[origin: WO2004077044A1] The invention relates to a method for selectively detecting and/or quantifying superparamagnetic and/or ferromagnetic particles on analytes. The method is characterized in that a frequency component of magnetic fields (15, 18), which is generated due to the non-linearity of the magnetization characteristic curve of the particles, is measured at a mixing frequency. A device for selectively detecting and/or quantifying superparamagnetic and/or ferromagnetic particles on analytes comprises: a container (12) that contains particles, which are to be detected and/or quantified, on analytes; at least one oscillator (13, 16; 25) for generating frequencies of alternating magnetic fields (15, 18); at least one field generator (14, 17) for subjecting the analytes to alternating magnetic fields (15, 18); a magnetic field sensor (20) for measuring a response magnetic field (19) of the particles, and; at least one phase-sensitive detector (21, 23). These elements are configured in such a manner as to enable a frequency component of the magnetic fields (15, 18), which is generated due to the non-linearity of the magnetization characteristic curve of the particles, to be measured at a mixing frequency.

IPC 1-7

G01N 27/74; G01N 33/543

IPC 8 full level

G01N 27/74 (2006.01)

CPC (source: EP US)

G01N 27/745 (2013.01 - EP US)

Citation (search report)

See references of WO 2004077044A1

Citation (examination)

EP 1262766 A2 20021204 - NIKITIN PETR IVANOVICH [RU]

Citation (third parties)

Third party :

- EP 1020128 A1 20000719 - LION APPAREL INC [US]
- EP 1262766 A2 20021204 - NIKITIN PETR IVANOVICH [RU]
- TEMPLE P.A.: "An introduction to phase-sensitive amplifiers: an inexpensive student instrument", AM. J. OF PHYSICS, vol. 43, no. 9, September 1975 (1975-09-01), pages 801 - 807, XP003021477
- WOLFSON R.: "Th elock-in amplifier: a student experiment", AM. J. PHYS., vol. 59, no. 6, June 1991 (1991-06-01), pages 569 - 572, XP003021478
- SCOFIELD J.H.: "Frequency-domain description of a lock-in amplifier", AM.J.OF PHYSICS, vol. 62, no. 2, February 1994 (1994-02-01), pages 129 - 133, XP009097728

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR

DOCDB simple family (publication)

WO 2004077044 A1 20040910; **WO 2004077044 A8 20050901**; DE 10309132 A1 20041118; EP 1597573 A1 20051123; JP 2006519366 A 20060824; US 2007155024 A1 20070705; US 8071027 B2 20111206

DOCDB simple family (application)

DE 2004000149 W 20040130; DE 10309132 A 20030228; EP 04706604 A 20040130; JP 2006501481 A 20040130; US 54744404 A 20040130