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(71) Applicant: **LIFE TECHNOLOGIES AS** [NO/NO]; Box 114, 0309 Smestad (NO).

(72) Inventors: **JOHANSEN, Maren**; c/o Life Technologies AS, Box 114, Smestad, 0309 Oslo (NO). **PAULSEN, Jan**; c/o Life Technologies AS, Box 114, Smestad, 0309 Oslo (NO). **FIRTH, Daniel**; c/o Life Technologies AS, Box 114, Smestad, 0309 Oslo (NO). **GOKMEN, Talha**; c/o Life Technologies AS, Box 114, Smestad, 0309 Oslo (NO).

FONNUM, Geir; c/o Life Technologies AS, Box 114, Smestad, 0309 Oslo (NO).

(74) Agent: **HGF**; 1 City Walk, Leeds Yorkshire LS11 9DX (GB).

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(54) Title: PARTICLES

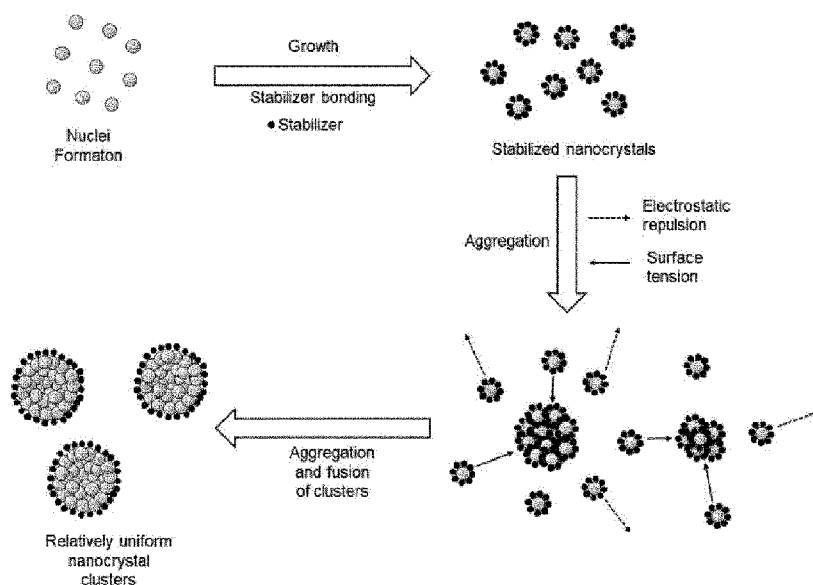


Figure 1

(57) Abstract: Particles This invention relates to magnetic clusters comprising nanocrystals of iron oxide. The magnetic clusters comprise an aromatic carboxylic acid and/or the magnetic clusters are monodisperse. The magnetic clusters may be useful in biological assays and other applications. The invention also relates to processes for preparing such magnetic clusters and methods of using the magnetic clusters, as well kits comprising the magnetic clusters.

RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*
- *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP2023/070373

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims;; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2023/070373

A. CLASSIFICATION OF SUBJECT MATTER INV. H01F1/00 ADD.		
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) H01F		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 2 796 153 A1 (SNU R&DB FOUNDATION [KR]) 29 October 2014 (2014-10-29) claims 1-4, 9-11; example 3 -----	1-26
A	US 4 247 597 A (RUSSELL JR JOHN J) 27 January 1981 (1981-01-27) claims 1-3 -----	1-26
A	EP 1 362 840 A1 (DSM FINE CHEM AUSTRIA GMBH [AT]) 19 November 2003 (2003-11-19) paragraph [0020]; claims 1-8 -----	1-26
X	WO 2020/096631 A2 (SEER INC [US]) 14 May 2020 (2020-05-14) paragraphs [0039], [0040], [0131], [0175], [0177], [0180], [0183], [0244], [0245]; claim 1; figure 1 -----	27-61
☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance;; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance;; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 27 January 2024		Date of mailing of the international search report 08/02/2024
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Primus, Jean-Louis

INTERNATIONAL SEARCH REPORT

Information on patent family members

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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-26

I: Claims 1-26 directed at known magnetic clusters, wherein the magnetic clusters comprise nanocrystals of iron oxide and an aromatic carboxylic acid

2. claims: 27-61

II: Claims 27-61 directed at monodisperse magnetic clusters comprising nanocrystals of iron oxide (independent claim 27); a method of making magnetic clusters (independent claim 34); magnetic clusters (independent claim 52); use of magnetic clusters (independent claims 53 and 54); a kit comprising magnetic clusters (independent claim 58)
