Title (en)

CRYOGEN FREE COOLING APPARATUS AND METHOD

Title (de)

KRYOGENFREIE KÜHLVORRICHTUNG UND VERFAHREN

Title (fr)

APPAREIL ET PROCÉDÉ DE REFROIDISSEMENT SANS CRYOGÈNE

Publication

EP 2409096 B2 20240619 (EN)

Application

EP 10710389 A 20100315

Priority

- GB 2010000454 W 20100315
- GB 0904500 A 20090316

Abstract (en)

[origin: WO2010106309A2] A cryogen free cooling apparatus comprises at least one heat radiation shield (54) surrounding a working region (20) and located in a vacuum chamber (4). A cryogen free cooling system has a cooling stage coupled to the heat radiation shield (54). Aligned apertures (56,58) are provided in the heat radiation shield and vacuum chamber walls. Sample loading apparatus has a sample holding device (2) attached to one or more elongate probes (3) for inserting the sample holding device through the aligned apertures (56,58) to the working region (20); and a thermal connector enables the sample holding device to be releasably coupled for heat conduction via said connector to a cold body or cold bodies within the vacuum chamber so as to pre-cool a sample on or in the sample holding device.

IPC 8 full level

F25D 19/00 (2006.01)

CPC (source: EP US)

F25B 9/14 (2013.01 - EP); **F25B 9/145** (2013.01 - EP); **F25D 19/00** (2013.01 - EP US)

Citation (opposition)

Opponent :

- WO 2007101305 A1 20070913 - CAMBRIDGE MAGNETIC REFRIGERATI [GB], et al
- J.E.RIX ET AL.: "Automated sample exchange and tracking system for neutron research at cryogenic temperatures", REVIEW OF SCIENTIFIC INSTRUMENTS, vol. 78, 2007, DOI: 10.1063/1.2426878
- H. Kambara, T. Matsui, Y. Niimi, and Hiroshi Fukuyama:"Construction of a versatile ultralow temperature scanning tunneling microscope', Review of Scientific Instruments 78,073703, published online 2 July 2007

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WO2021229149A1; US11360140B1; GB2592415A; EP4246064A3; WO2021170976A1; WO2022132331A1; EP4150272B1; EP4088068B1; US12013170B2

Designated contracting state (EPC)

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 SE SI SK SM TR

DOCDB simple family (publication)

WO 2010106309 A2 20100923; **WO 2010106309 A3 20110519**; **WO 2010106309 A8 20111013**; EP 2409096 A2 20120125; EP 2409096 B1 20190821; EP 2409096 B2 20240619; EP 3620732 A1 20200311; EP 3620732 B1 20220216; EP 4027081 A2 20220713; EP 4027081 A3 20220831; EP 4027081 B1 20221221; EP 4148353 A1 20230315; EP 4148353 B1 20240522; ES 2909009 T3 20220504; ES 2935698 T3 20230309; FI 2409096 T4 20240620; FI 4027081 T3 20230113; FI 4148353 T1 20230329; GB 0904500 D0 20090429; JP 2012520987 A 20120910; US 2012102975 A1 20120503

DOCDB simple family (application)

GB 2010000454 W 20100315; EP 10710389 A 20100315; EP 19187223 A 20100315; EP 22154522 A 20100315; EP 22205298 A 20100315; ES 19187223 T 20100315; ES 22154522 T 20100315; FI 10710389 T 20100315; FI 22154522 T 20100315; FI 22205298 T 20100315; GB 0904500 A 20090316; JP 2012500303 A 20100315; US 201013257032 A 20100315