

## Title (en)

Method and device for the contactless mixing of liquids

## Title (de)

Verfahren und Vorrichtung zur berührungslosen Durchmischung von Flüssigkeiten

## Title (fr)

Procédé et dispositif destinés au mélange sans contact de liquides

## Publication

**EP 2783747 A1 20141001 (DE)**

## Application

**EP 14162100 A 20140327**

## Priority

- EP 13161448 A 20130327
- EP 14162100 A 20140327

## Abstract (en)

The method involves providing a volume of liquid (50), and generating a thermal convection flow at a surface/boundary surface of the volume of liquid by irradiating electromagnetic radiation (30) into the volume of liquid. The volume of liquid is provided in a sample chamber (45) that is designed in an open or closed manner. A capillary having an inner diameter of from 0.05 mm to 0.8 mm is provided as a drop on an object carrier, where the capillary is made from glass. The electromagnetic radiation is produced by an LED or a laser and directed parallel and/or antiparallel to gravitation. An independent claim is also included for a system with a device for executing a method for mixing liquids or particles with liquid.

## Abstract (de)

Die Erfindung betrifft allgemein eine Vorrichtung sowie ein Verfahren zum Durchmischen von Flüssigkeiten (50) bzw. Partikeln mit einer Flüssigkeit (50). In einem Flüssigkeitsvolumens (50) wird eine thermische Konvektions-Strömung an zumindest einer Oberfläche des Flüssigkeitsvolumens durch Einstrahlen von IR-Strahlung (30) in das Flüssigkeitsvolumen erzeugt. Dadurch kann eine Verarmungszone an der Oberfläche vermieden werden und Wechselwirkungen der Partikel mit der Oberfläche mittels Oberflächen basierten Messverfahren genauer gemessen werden.

## IPC 8 full level

**B01F 13/00** (2006.01)

## CPC (source: EP US)

**B01F 33/053** (2022.01 - US); **B01F 33/055** (2022.01 - EP US); **B01F 33/12** (2022.01 - EP US); **B01F 33/3034** (2022.01 - EP US); **B01F 35/20** (2022.01 - EP US); **B01F 2215/0431** (2013.01 - EP US); **B01F 2215/0472** (2013.01 - EP US)

## Citation (applicant)

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- J. MOL. RECOGNIT., vol. 12, 1999, pages 293 - 299
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## Citation (search report)

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- [A] US 7968117 B1 20110628 - MORRISON DENNIS R [US], et al
- [A] WO 2012167221 A1 20121206 - UNIV WAYNE STATE [US], et al
- [X] EMIR VELA ET AL: "Non-contact mesoscale manipulation using laser induced convection flows", INTELLIGENT ROBOTS AND SYSTEMS, 2008. IROS 2008. IEEE/RSJ INTERNATIONAL CONFERENCE ON, IEEE, PISCATAWAY, NJ, USA, 22 September 2008 (2008-09-22), pages 913 - 918, XP031348450, ISBN: 978-1-4244-2057-5
- [X] DUHR S ET AL: "Thermophoresis of DNA determined by microfluidic fluorescence", EUROPEAN PHYSICAL JOURNAL E. SOFT MATTER, EDP SCIENCES, IT, vol. 15, no. 3, 1 November 2004 (2004-11-01), pages 277 - 286, XP002471678, ISSN: 1292-8941, DOI: 10.1140/EPJE/I2004-10073-5

## Cited by

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## 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

## Designated extension state (EPC)

BA ME

## DOCDB simple family (publication)

**EP 2783747 A1 20141001**; **EP 2783747 B1 20180502**; ES 2677975 T3 20180807; US 2014293731 A1 20141002; US 9987604 B2 20180605

## DOCDB simple family (application)

**EP 14162100 A 20140327**; ES 14162100 T 20140327; US 201414227521 A 20140327