

Title (en)  
ACOUSTIC INTERFEROMETRY METHOD AND DEVICE

Title (de)  
VERFAHREN UND EINRICHTUNG FÜR DIE AKUSTISCHE INTERFEROMETRIE

Title (fr)  
PROCEDE ET DISPOSITIF D'INTERFEROMETRIE ACOUSTIQUE

Publication  
**EP 1328801 A4 20041110 (EN)**

Application  
**EP 01968067 A 20010822**

Priority  
• US 0126211 W 20010822  
• US 22708100 P 20000822

Abstract (en)  
[origin: WO0216924A1] A standing wave interferometry analysis method and sensor (20) for characterizing physical properties of fluids, suspensions and emulsions at ultrasonic frequencies is disclosed. Standing wave features, peaks and valleys are created by continuously changing the ultrasonic frequency by small intervals, between the two ultrasonic transducers (22, 24), which define a sensing zone (30). The transducers (22, 24) are located a known distance apart, for operating in their near field region. Standing wave features are analyzed for frequency location, amplitude and frequency width. The temperature is recorded at each frequency interval. Data from one or more standing wave features are used for calculations of viscosity, density, particle concentration and sound velocity. More accurate particle concentration data is obtained by repetitively scanning the same standing wave peak and measuring resultant frequency shift, caused by particle concentration at the receiving transducer (24). The method is applicable to sub-micrometer particles and measuring the carbon concentration in used engine oil.

IPC 1-7  
**G01N 29/02**

IPC 8 full level  
**G01N 29/036** (2006.01); **G01N 29/22** (2006.01); **G01N 29/32** (2006.01); **G01N 29/34** (2006.01)

CPC (source: EP)  
**G01N 29/036** (2013.01); **G01N 29/223** (2013.01); **G01N 29/326** (2013.01); **G01N 29/348** (2013.01); **G01N 2291/011** (2013.01); **G01N 2291/015** (2013.01); **G01N 2291/0226** (2013.01); **G01N 2291/02416** (2013.01); **G01N 2291/0258** (2013.01); **G01N 2291/02809** (2013.01); **G01N 2291/02818** (2013.01); **G01N 2291/02881** (2013.01); **G01N 2291/0421** (2013.01); **G01N 2291/0422** (2013.01); **G01N 2291/102** (2013.01)

Citation (search report)  
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• [DA] US 5533402 A 19960709 - SARVAZYAN ARMEN [US], et al  
• [XY] EGGERS F: "Ultrasonic Velocity and Attenuation Measurements in Liquids with Resonators, Extending the MHz Frequency Range", ACUSTICA, S. HIRZEL VERLAG, STUTTGART, DE, vol. 76, no. BD76, 1992, pages 231 - 240, XP002906009, ISSN: 0001-7884  
• [XY] EGGERS F ET AL: "NEW PLANO-CONCAVE ULTRASONIC RESONATOR CELLS FOR ABSORPTION AND VELOCITY MEASUREMENTS IN LIQUIDS BELOW 1 MHZ", MEASUREMENT SCIENCE AND TECHNOLOGY, IOP PUBLISHING, BRISTOL, GB, vol. 5, no. 9, 1994, pages 1131 - 1138, XP001147343, ISSN: 0957-0233  
• [XY] EGGERS F ET AL: "BROAD-BAND ULTRASONIC MEASUREMENT TECHNIQUES FOR LIQUIDS", MEASUREMENT SCIENCE AND TECHNOLOGY, IOP PUBLISHING, BRISTOL, GB, vol. 7, no. 1, 1996, pages 1 - 19, XP000551465, ISSN: 0957-0233  
• See references of WO 0216924A1

Designated contracting state (EPC)  
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

DOCDB simple family (publication)  
**WO 0216924 A1 20020228**; AU 8834501 A 20020304; EP 1328801 A1 20030723; EP 1328801 A4 20041110

DOCDB simple family (application)  
**US 0126211 W 20010822**; AU 8834501 A 20010822; EP 01968067 A 20010822