

Hermann-von-Helmholtz-Platz 1
76344 Eggenstein-Leopoldshafen

Aushang

Bearbeiter/in: Frau I. Schwartz

Datum: Donnerstag, 5. April 2018

Einladung zum Seminar über „Nukleare Energieerzeugung“

Zeit: Dienstag, **5. Juni 2018**, 11:00 Uhr

Ort: Karlsruher Institut für Technologie, Hermann-von-Helmholtz-Platz 1
76344 Eggenstein-Leopoldshafen, INR, **Bau 521**, Kolloquiumsraum (**R. 302**)

Referent: Herr Martins Sarma, Helmholtz-Zentrum Dresden-Rossendorf

Title: Liquid metal route for creation of metal matrix composites

Abstract:

Addition of ceramic particles to a metal matrix allows to tailor the base material for specific needs, for -instance, increase the yield and tensile strength while maintaining a good ductility. The main metal matrix composite (MMC) production routes are powder metallurgy (PM) and casting. The main drawbacks of PM are the high costs, long processing time and the limited usage of the end product. In the liquid metal route, the particles are inserted directly in the melt which is stirred to distribute them. However, as smaller particles are used the more they tend to agglomerate. A rather simple solution for dispersing the particles in a liquid metal is to apply ultrasonic treatment – cavitation created by ultrasound can break particle clusters, clean the particle surface and support the dispersion. Light metal composites are intensively researched; however, research with steel composites is limited due to higher working temperatures and harsher working environment which the particles have to sustain. Additionally, direct introduction of the ultrasonic probe into the melt is not possible. A way to overcome this is to create the cavitation in a contactless way - superposition of induction heating with a static axial magnetic field. This creates an alternating electromagnetic body force in a liquid metal which in turn produces pressure oscillations and cavitation. The aim of this work is to create conditions for cavitation in steel, produce steel composites and assesses the feasibility of the proposed method for particle dispersion in steel. The presentation will provide an overview of the technique and show the newest results in contactless application of cavitation for the purpose of particle dispersion..



gez. R. Stieglitz

Hinweis: Alle auswärtigen Besucher des Seminars werden gebeten, ihren gültigen Personalausweis oder Reisepass mitzubringen.