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Dr Bill Griffiths

Lecturer

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About

Dr W D Griffiths has been involved in heat transfer and solidification research for the past 20 years. The theme running through this research is the identification and study of the mechanisms that control metallurgical processes. Here at the University of Birmingham, research has been focussed on four areas.
(1) Interfacial heat transfer and particularly the enhancement of heat transfer by casting in an atmosphere of He.
(2) Oxide film defects in light alloys, aimed at characterising the conditions leading to the elimination of these defects.
(3) The Lost Foam casting process.
(4) Positron Emission Particle Tracking (PEPT), a technique for tracking radioactively labelled particles inserted into liquid metal, currently being examined for its applicability to the study of the movement of inclusions in castings.

To date, some 80 journal and conference papers have been published.

Qualifications

- FICME
- CEng
- PhD (CNAA), Sheffield Hallam University, 1989

Biography

Dr Griffiths obtained a PhD studying the residual stresses in steel quenched in water-soluble polymer quenchants, and has since worked in both industry and academia on understanding metallurgical processes.

This has included positions at Foseco International working in light alloys, and Nottingham University researching the application of electromagnetic stirring to DC cast Al. Most recently Dr. Griffiths was the Federal-Mogul Senior Research Fellow at UMIST, researching interfacial heat transfer in light alloy and ferrous casting, before moving to the University of Birmingham as a Lecturer.

Teaching

Teaching Programmes:

- FY: Properties of Matter
- UG: FoM-B (Shaping)
- UG: Advanced Metal Processing
- PG: MRes in the Science and Engineering of Materials
- MRes in Biomaterials

Modules:

- Introduction to Materials

Postgraduate supervision

Oxide film defects in Zn and Zn-Al alloys.

The effect of casting in a He atmosphere on fatigue properties of Al alloys.

Positron Emission Particle Tracking to Study Inclusions in Liquid Metals.

Quality of DC cast Al alloys.

Fluidity in the Lost Foam casting process, and the effect of using low molecular weight foam patterns

Research

RESEARCH THEMES

- Interfacial heat transfer during casting solidification.
- Defects in light alloy castings and their effects on properties.
- Lost Foam casting.
- Radioactive particle tracking using Positron Emission Particle Tracking (PEPT)

Other activities

Dr. Griffiths was President of the Institute of Cast Metals Engineers in 2009-10, chairs their Technical Board, and sits on the Finance and General Purpose Committee, and the Investment Advisory Board. He is also Honorary Treasurer of the Birmingham Metallurgical Association, and their President 2004-2006.

Publications

Hallam C. P. and Griffiths W. D. (2004) “Interfacial heat transfer in the aluminium gravity die casting process”, **Met. and Mat. Trans. B**, vol. 35B, 721-733.

Raeiszadeh R. and Griffiths W. D., (2006) “A method to study the history of a double oxide film defect in liquid aluminium alloys”, **Met. And Mat. Trans. B**, vol. 37, 865-871.

Griffiths W. D., Cox M., Campbell J. and Scholl G. (2007) “The influence of counter-gravity mould filling on the reproducibility of the mechanical properties of a low alloy steel”, **Mat. Sci. Technol.**, vol. 23, 137-144.

Griffiths W. D. and Lai N-W, (2007) “Double oxide film defects in cast magnesium alloy”, **Met. and Mat. Trans. A**, vol. 38A, 190-196.

Raiszadeh R. and Griffiths W. D. (2008) “A semi-empirical mathematical model to estimate the duration of the atmosphere within a double oxide film defect in pure aluminium alloy”, , **Met. and Mat. Trans. B**, vol. 39B, 298-303.

Griffiths W. D., Beshay Y., Parker D. J. and Fan X., (2008) “The determination of inclusion movement in steel castings by Positron Emission Particle Tracking (PEPT)”, **J. Mat. Sci.**, vol. 43, 6853-6856.

Griffiths W. D. and Raiszadeh R.. “Hydrogen, porosity and oxide film defects in liquid Al” (2009), **J. Mat. Sci.**, vol. 44, 3402-3407.

Griffiths W. D., Parker D. J., Fan X. andHausard M. (2010), “Tracking inclusions in aluminium alloy castings using Positron Emission Particle Tracking (PEPT)”, **Mat. Sci. Technol.**, vol. 26, 528-533.

Griffiths W. D. and Kawai K., (2010), “The effect of increased pressure on the interfacial heat transfer during solidification of aluminium alloy die castings”, **J. Mat. Sci.**, vol. 45, 2330-2339.

Raiszadeh R. and Griffiths W. D., (2010) “The behaviour of double oxide film defects in liquid Al alloys under atmospheric and reduced pressures”, **J. Alloys and Compounds**, vol. 491, 575-580

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