

**Professor John Knott** OBE, FRS, FEng, FIMMM (FIM3), FIMechE, FWeldI, FRSA.

Professor of Metallurgy and Materials

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## About

**Professor Knott has been awarded the following honours and distinctions:**

- Fellow, The Institute of Materials
- Fellow, The Welding Institute
- Fellow, The Royal Society of Arts
- Delivered the joint Royal Society/ Royal Academy of Engineering Lecture "Two Steps from Disaster – the Science and Engineering of Structural Integrity" 1999
- "The John F. Knott Symposium" TMS Fall Meeting 2002
- Elected as Foreign Associate, the (US) National Academy of Engineering 2003
- DEng (honoris causa) – The University of Glasgow 2004
- OBE "for services to Nuclear Safety" June 2004 (conferred Oct 2004)
- Robert Franklin Mehl Award and Institute of Metals Lecture "Power in Trust", TMS (Spring Meeting 2005)
- Elected as Foreign Member of the Japan Institute of Metals 2005
- Awarded the Leverhulme Medal of the Royal Society 2005
- Elected as Foreign Fellow of the Indian National Academy of Engineering 2006
- Delivered the 2006 Hatfield Lecture "Quantifying the Quality of Steel"
- Awarded the 2007 Brooker Medal, The Welding Institute (2008)
- Awarded the Platinum Medal of IOM<sup>3</sup> in 2009
- D.Eng (*honoris causa*) University of Sheffield 2010

## Qualifications

- ScD, Cambridge, 1991
- PhD, Cambridge, 1963
- BMet, Sheffield, 1959

## Biography

**Selected highlights:**

- Past President, Birmingham Metallurgical Association
- 2010: Chairman, Technical Advisory Group on Structural Integrity (member since 1988)
- From 2006: member of Defence Nuclear Safety Committee
- 2003/4 Acting Chair, Nuclear Safety Advisory Committee
- From 2003: member of Graphite Technical Advisory Committee
- From 2003: member of (MoD) Research Programmes Group
- From 2003: Editor, *Materials Science and Technology*
- From 2000: Chairman Rolls-Royce Materials, Manufacturing and Structures Advisory Board (member since 1989)
- President, International Congress on Fracture, 1993-97
- From 1988: member of TWI Research Board

## Research

- Relationships between the microstructures and mechanical properties of a wide range of engineering alloys and other structural materials
- Fracture, fatigue and embrittlement in metals

- High temperature properties of materials
- Environmentally-assisted fracture
- Behaviour of weldments and composites
- Effects of residual stress on fracture and fatigue processes

## Publications

### Selected

- Balart, M.J. and Knott, J.F. "Effects of Geometry and Flow Properties on the Fracture Toughness of a C-Mn Reactor Pressure Vessel Steel in the Lower Shelf Region" Intl. Jnl. Press. Vess. And Piping, Vol. 83, pp 205-215, 2006.
- Knott, J.F. "Deterministic and Probabilistic Modelling of Brittle Fracture Mechanisms in Ferritic Steels", Fat. And Fract. Eng. Matls. And Struct, Vol. 29, pp 714-724, 2006.
- Wu, S.J. Ding, R. and Knott, J.F. "Statistical Analysis of Phosphorus Segregation on Intergranular Fracture Facets in Pressure Vessel Steels" in press, Materials Science and Technology, 2007
- Bhattacharjee, D. and Knott, J.F. "A critical shear displacement criterion for ductile-brittle transition under mixed mode I and II loading " Materials Science and Technology, Vol 23, pp 1269-1277, 2007
- Balart, M.J. and Knott J.F. "Simulated Coarse-Grained Heat-Affected-Zone Microstructures in DIN22NiMoCr37 Steel", Journal of Nuclear Materials, Vol. 361, pp 112-120. 2007
- Knott, J.F. "Local approach concepts and the microstructures of steels" Eng. Fract. Mech. Vol.75, pp 3560-9, 2008
- Balart, M.J. and Knott, J.F. "Low Temperature Fracture Properties of DIN 22NiMoCr37 Steel in Fine Grained Bainite and Coarse Grained Tempered Embrittled Martensite Microstructures" Eng. Fract. Mech. Vol. 75, pp 2480-2513, 2008
- Knott, J.F. "Quantifying the Quality of Steel" Ironmaking and Steelmaking Vol. 35, pp 264-282, 2008
- Eason, E.D. Hall, G. Heys, G.B. Knott, J.F. Marsden, B.J. Preston, S.D. and Swan, T. "The Origins and Use of the Equivalent Temperature Concept" Journal. of Nuclear Materials. Vol. 381, pp 106-113, 2008
- Knott, J.F. "Energy – Materials and Mechanisms" Energy Materials Vol.3 pp 11-19, 2008
- Knott, J.F. and Lidbury, D.P.G. "Views of TAGSI on effects of neutron irradiation on ductile tearing in ferritic steels" Intl. Jnl. Press. Vess. and Piping Vol 86, pp 395-402, 2009
- Balart M.J. and Knott J.F. "Micro-alloying design for Nuclear reactor pressure vessel (RPV) Steels" in "Nuclear Reactors, Nuclear Fission and Fusion Engineering" ed. A. Aasen and P. Olsson, Nova Science Publishers Inc. Chapter 5, July 2009 ISBN: 978-1-60692-508-9.
- Aratani, M. and Knott J.F. "The growth of short fatigue cracks ahead of a notch in high strength steel" Eng. Fail. Anal. Vol. 17, pp 200-207, 2010.
- Knott, J.F. "Fracture Resistance in Aluminium" in "Fundamentals of Aluminium Metallurgy – Production, Processing and Applications", ed. Roger Lumley, Woodhead Publishing 2011 pp 538-57

