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Professor Damian Hampshire is head of the Superconductivity Group in the Physics Department in Durham University, England. He was Editor-in-chief of the IoP journal Superconductor Science and Technology (2006-2013) and founding Director of the Centre for Materials Physics in Durham (2010). He is PI for the European Reference Laboratory for Fusion Energy, member of the Executive Board of the British Cryogenics Council and Chairman of the International Science Programme Committee for the European Conference on Applied Superconductivity, EuCAS (Glasgow) 2019.

Research highlights include: Experimental [1], theoretical [2], computational evidence [3] and visualisation [4] that in polycrystalline materials, flux-flow is along channels (i.e. grain-boundaries in polycrystalline materials) that limit the critical current density (J_c) to less than 1% of the theoretical limit in high magnetic fields; The design, in-house fabrication, development and operation of variable-temperature instruments for measuring, developing and understanding the strain-dependant critical current density of superconductors in magnetic fields in-house and at international high magnetic field facilities [5]; The discovery of a new class of nanocrystalline materials where the high magnetic field properties are improved by making the length scales for the microstructure to be similar to the superconducting coherence length [6]; Development of the metrology for measuring large numbers of high-field superconducting strands for the \$50 B fusion energy tokamak being built in France and the development of joints for the commercial exploitation of fusion energy [7].

[1] Guanmei Wang, Mark J. Raine, and Damian P. Hampshire. [How resistive must grain boundaries in polycrystalline superconductors be, to limit \$J_c\$? - SUST 20 104001 \(2017\)](#) [2] G. J. Carty and D. P. Hampshire - [The critical current density of an SNS Josephson-junction in high magnetic fields - SuST 26 065007 \(2013\)](#) [3,4] G. J. Carty and D. P. Hampshire - [Visualising the mechanism that determines the critical current density in polycrystalline superconductors using time-dependent Ginzburg-Landau theory - Phys. Rev. B. 77 \(2008\) 172501](#) [5] Kozo Osamura, Shutaro Machiya and Damian Hampshire. [Mechanism for the uniaxial strain dependence of the critical current in practical REBCO tapes - SUST 29 065019 \(2016\)](#) D. M. J. Taylor and D. P. Hampshire - [The scaling law for the strain-dependence of the critical current density in \$Nb_3Sn\$ superconducting wires - Supercond. Sci. Tech 18 \(2005\) S241-S252](#) [6] H J Niu and D P Hampshire - [Disordered Nanocrystalline Superconducting \$PbMo_6S_8\$ with a Very Large Upper Critical Field. Phys. Rev. Lett 91 027002 \(2003\)](#) [7] T. Lee, I. Jenkins, E. Surrey and D. P. Hampshire - [Optimal design of a toroidal field magnet system and cost of electricity implications for a tokamak using high temperature superconductors Fusion Engineering and Design 98 \(2015\)](#) DOI: 10.1016/j.fusengdes.2015.06.125