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# 原子核工学セミナーのご案内

日程：2024 年 7 月 16 日　午前 10 時～12 時
会場：桂ラウンジ（B クラスター）

講演者：
英国原子力公社（United Kingdom Atomic Energy Authority: UKAEA）
Prof. Amy Gandy : Head of Programme
Dr. David Bowden: Group Leader
Dr. Slava Kuksenko : Project Lead Scientist
Dr. Jack Haley : Senior Materials Engineer
Dr. James Wade-Zhu : Project Lead Scientist

題目：UKAEA における核融合材料開発
概要 : The UKAEA Materials Division is leading the analysis and development of materials critical to realising commercial fusion power. Within the UKAEA Materials Division, the Materials Science and Engineering (MSE) team engage with both academia and industry to realise material solutions to address operational challenges, with a strong scientific approach in order to engineer the specific material microstructures we need. The LIBRTI (Lithium Breeding Tritium Innovation) programme is an exciting new programme at UKAEA to design and build a series of breeder blanket prototypes, exposed to a neutron source, enabling the demonstration of breeder concepts and material performance within these environments. As part of this, new steels are being developed to extend blanket operating temperatures to 650°C, and enhance the lifetime of critical components, through improved creep lifetimes, superior mechanical performance, and enhanced radiation resilience. The UKAEA-led NEURONE (Neutron Irradiation of Advanced Steels) programme is exploring what are termed advanced reduced-activation ferritic-martensitic (ARAFM) steels. In parallel, boron-enhanced steels (BRAFM) and oxide dispersion strengthened (ODS) steels are being developed by the UKAEA MSE team to further enhance the

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resilience of structural steels in a fusion environment. Alongside steels, non-metallic materials are also being researched and developed by the MSE team. Coatings are being explored, both to protect underlying structural materials from corrosion damage and prevent tritium ingress. Shielding materials are required to protect sensitive superconducting magnets, proposed on prototype plants such as the Spherical Tokamak for Energy Production (STEP) device. Ceramic composites are another area of investigation which may offer a significant increase of plant operating temperature, yielding huge economic benefit through the additional electrical power generated.

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