

# Raymond Smith, Ph.D.

STAFF SCIENTIST · PHYSICAL AND LIFE SCIENCES

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Dr. Smith is an expert in high-power laser experiments with many years of experience working in leading laboratories across the UK, France, Japan, and the USA. In the early part of his career, he focused on plasma physics, developing X-ray laser sources for picosecond plasma interferometry applications.

Since 2004, Dr. Smith's primary research interests have centered on the study of material properties under high-pressure conditions. His work includes measurements of equation-of-state, deformation kinetics, crystal structure, and thermal transport properties. He has developed state-of-the-art experimental techniques to determine high-pressure material properties along dynamic-compression paths.



Dr. Smith's experimental work at premier facilities such as the National Ignition Facility (NIF), Omega-60 and Omega-EP, the X-ray Free Electron Laser (XFEL), and the Advanced Photon Source Dynamic Compression Sector (DCS) has led to numerous high-profile publications, including cover articles in *Nature* and *Nature Astronomy*. He led the development of laser ramp-compression techniques for measuring isentropes in materials cold-compressed to multi-terapascal pressures.

He serves as the lead Principal Investigator for the NIF TARDIS X-ray diffraction platform, which has enabled direct measurements of crystal structure and microstructural texture at TPa pressures. Additionally, he has designed and implemented 1D and 2D imaging velocimetry systems at the Jupiter Laser Facility to study heterogeneous deformation, including orientation-dependent brittle failure under dynamic compression. Dr. Smith has played a key role in advancing experimental capabilities at emerging third- and fourth-generation X-ray facilities.