

IEEE PHOTONICS SOCIETY DISTINGUISHED LECTURE

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Tuesday June 17, 4PM
Hammond Auditorium
Department of Physics, Colorado State University
Reception starts at 3:40 PM

Photonics for Fusion and Nuclear Science

Abstract: The history of lasers and optics activities at the Lawrence Livermore National Laboratory spans more than 5 decades and has involved over 40,000 person-years of effort. This presentation will introduce two ongoing efforts at LLNL that use lasers to enable nuclear-related science and applications. At LLNL's National Ignition Facility, the world's largest and highest energy laser system is being used to pursue the science and societal applications of nuclear fusion. At LLNL's laser-Compton laboratory, lasers and state of the art particle accelerators are being used to create tunable, gamma-ray sources whose peak brilliance exceeds that of the world's largest synchrotrons by more than 15 orders of magnitude and whose output enables for the first time the isotope-specific detection, assay and imaging of materials.

Dr. C.P.J. Barty is the Chief Technology Officer for the National Ignition Facility and Photon Science Directorate at the Lawrence Livermore National Laboratory. His academic background includes Ph.D. and M.S. degrees in applied physics from Stanford University and B.S. degrees, each with honors, in chemistry, physics, and chemical engineering from North Carolina State University. He has published more than 150 manuscripts and presented over 200 invited talks, spanning topics in lasers, optics, materials science, medicine, chemistry, engineering, and physics. He was elected a Fellow of the Optical Society of America for his pioneering work on intense short-pulse lasers and was elected a Fellow of SPIE for his contributions to ultrafast and x-ray science. During his career, he has founded both the biennial international meeting on Ultrafast Optics and the International Conference on Ultrahigh Intensity Lasers. Currently, he is the Co-chair of the International Committee on Ultrahigh Intensity Lasers.