

Foreword

Selected papers from the 24th Target Fabrication Specialists Meeting

Guest Editors

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We are pleased to publish this special issue of *Fusion Science and Technology* (FST) as a result of the 24th Target Fabrication Specialists Meeting. This meeting was held June 6–9, 2022, in a virtual setting, as a result of the COVID-19 pandemic. The four-day meeting covered the diverse aspects of fabricating targets for experiments on high-power, high-energy laser and ion facilities. Topics included target component design, assembly, material formulation and synthesis, coatings and deposition, additive manufacturing, metrology, characterization, facilities and operations, capsules and hohlraums, machining, gas handling, industrial and biomedical applications, containment, as well as safety and environmental impact. The meeting was attended by 165 engineers, scientists, physicists, and technologists, representing institutions including the National Nuclear Security Administration (NNSA), the Atomic Weapons Establishment (AWE), the French Alternative Energies and Atomic Energy Commission (CEA), General Atomics (GA), Johns Hopkins University, the University of Rochester's Laboratory for Laser Energetics (LLE), Lawrence Livermore National Laboratory (LLNL), Los Alamos National Laboratory (LANL), LUXEL, ManTech, Sandia National Laboratories (SNL), Science and Technology Facilities Council (STFC), and the University of Nebraska–Lincoln. There were 49 oral technical presentations and an additional 45 poster technical presentations.

As in years past, the hot topics at the meeting included target fabrication and assembly, capsules and mandrels, new developments in coatings and material developments, material doping, variable-density (or low-density, high-atomic-number) materials, machining, 2D and 3D X-ray radiography and tomography,

neutron pinhole developments, and target containment systems.

The 20 manuscripts presented in this special issue span the topics covered at the meeting. The three most active areas of research reported here include coatings, capsules, and radiography. Coatings have been a very busy area of research, lately, in topics such as developing new coating techniques, new metrology techniques, as well as the coating of challenging geometries. Materials development work has focused on processing and machinability through infiltration as well as unique doping. X-ray analysis has continued to be ripe for developments in characterizing targets that span the periodic table in atomic densities, automation of feature detection, and improving the metrology quantification of target geometry.

As is traditional for this meeting, the Larry Foreman Award was presented to an individual who has made a substantive contribution toward innovation and excellence in target fabrication. The award was presented this year to Abbas Nikroo, for extraordinary and committed leadership in target fabrication research, development, and production at General Atomics and Lawrence Livermore National Laboratory.

This meeting changed formats several times and took several years to plan because of an unprecedented global pandemic. Special thanks are due to the staff at General Atomics, especially Neal Tomlin, Kasandra Moran, and Carolyn Isherwood, for their help in planning an in-person meeting in San Antonio, Texas, and then canceling when we made the tough decision to change the format to virtual.

The editors would like to thank the authors for their hard work and willingness to write these manuscripts. As

we keep pushing forward the technologies that are required to meet the tougher and higher-precision requirements for target quality, we hope that the reader is inspired to present their own work at the upcoming 25th Target Fabrication Specialists Meeting. In the meantime, please enjoy this special issue!

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