25th Target Fabrication Specialists Meeting

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Meeting Sessions to start promptly at 8:00 AM Daily

Host Organization:

GENERAL ATOMICS

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Meeting Sessions to start promptly at 8:00 AM Daily

Link to Expected Paper Submissions

https://www.ga.com/target-fabrication-meeting-2024/paper-submissions

Thank you to our Platinum & Gold sponsors:

Sunday, August 25th, 2024

Registration and Reception

6:00 – 9:00 PM	**Registration/Reception** *Reminder: Bring Passport/Green Card/DOE Badge/GA badge for citizenship verification* **Location**: Palm Terrace at the Bahia Resort Hotel 998 West Mission Bay Drive San Diego, CA 92109

Monday, August 26th, 2024

Conference Day 1

Conference Location: Mission Bay Ballroom

6:45 – 7:45 AM	**Breakfast** (provided) **Location**: Bahia Patio (next to Lobby) at the Bahia Resort Hotel
Session 1 Plenary Talks **Session Chairs: Don Czechowicz, John Rawls, GA**	
8:00 AM	Welcome/Remarks from General Atomics Linden P. Blue, GA
8:05 AM	The Historic 25th Target Fabrication Specialists Meeting John Rawls, GA
8:20 – 9:00 AM	How we got thermonuclear fusion without fission Omar Hurricane, LLNL
9:00 – 9:40 AM	Technological Advancements Enabling Fusion Ignition on NIF Gordon Brunton, LLNL
9:40 – 9:55 AM	Break
Session 2 Plenary Talks **Session Chair: Mike Farrell, GA**	
9:55 – 10:35 AM	Target Fabrication after Ignition Michael Stadermann, LLNL
10:35 – 11:15 AM	Metrology Contribution to Ignition Haibo Huang, GA
11:15 – 11:55 AM	Laser-Direct-Drive Experiments on OMEGA Contributing to Ignition and High Yield Sean Regan, LLE
12:00 PM	Group Photo
12:00 – 1:00 PM	Lunch Break (Provided) Location: Bahia Patio (next to Lobby) at the Bahia Resort Hotel

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Session 3 Plenary Talks **Session Chair: Nigel Martin, AWE**	
1:00 – 1:40 PM	Prospectus on Inertial Fusion Energy Cliff Thomas, LLE
1:40 – 2:10 PM	Current & Future Capabilities in Target Fabrications Andy Spencer, AWE
2:10 – 2:40 PM	Progress and Perspectives in LMJ Target Fabrication Virgile Bernigaud, CEA
2:40 – 5:00 PM	Break and Poster Session I
Poster Session I	
M. Aggleton (1)	CFTA Fill Rate Study
J. Alcala (2)	Overview of Capsule Fill Tube Assembly (CFTA) articles and qualifying processes
E. Alfonso (3)	Capsule Laser Drilling Progress and Improvements
M. Arend (4)	Target Fabrication Machining Facility Upgrades
S. Astbury (5)	Tape Targetry to Enable High Repetition Rate High Power Laser Experiments
B. Berry (6)	Helium Leak Detection and Testing for Capsule Fill Tube Attachments
N. Bhandarkar (7)	Optimization of VISAR Mirror for NIF Targets
C.A. Blough (8)	Machining Process for LANL Bosque Shells
R. Botrel (9)	Development of a specific electroplating process for the manufacturing of thin-walled hohlraum
R. Chow (10)	Advances in Fabrication Methods for Evolving Target needs
C. Clary (11)	Long Distance Transport Analysis for an Ignition Experiment Capsule Fill Tube Assembly (CFTA)
S. Diaz (12)	X-ray Sagometer Process for Cryogenic Targets
M. Do (13)	2PP Printing of 3D Deuterated Plastic Lattices: Challenges and Optimization
D. Goodelman (14)	Diamond-like carbon (DLC) coatings prepared by pulsed plasma physical vapor deposition
B. Farhi (15)	Cryogenic Planar Ablation: Testing and Fabrication
S. Fess (16)	Printed Targets with Sub-micron Feature Patterns for the Study of Ablator Defects
J.-B. Forien (17)	Improving geometrical uniformity of ablator capsules using monitoring during coating process
M. Havre (18)	DU Hohlraum Leaching Improvements
J. Crabtree (19)	Techniques for fielding Kr-Doped Deuterium Ice and Ice Shell in ICF Targets

S. Irving (20)	Target Manufacture for Shock Tube Geometries and Astrophysical Shock Experiments
A. Jara (21)	Nanostructured Targets
J. Jestine (22)	Investigations into PolyHIPE contamination and analysis of low chlorine content foam
S. Karim (23)	Advancements of Complex Target Manufacturing Efforts at Laboratory for Laser Energetics (LLE)
C. Kong (24)	HDC Leaching Cleaning Experiments
J. Kroll (25)	Ignition Target Baseline Design for Indirect Drive Ignition Experiments on the National Ignition Facility (NIF)
M. Lament (26)	Developing Manufacturing Techniques for the Equation of State Campaign
N. Lau (27)	The Development of Compound Parabolic Concentrators (CPC)
J. Lavelle (28)	Omega CylDRT Fabrication Process
L. Leal (29)	Cryogenic Target Diagnostic Band Subassemblies and Target Shielding for Laser Experiments at NIF
X. Lepro (30)	Changes in Fill Tube Curvature during Target Assembly
S. LeTacon (31)	Capsule with controlled roughness for turbulence laser experiments
B. Levay (32)	Use of Dragonfly Software for HDC Drill Hole Analysis
C. Liberatore (33)	Development of Mixed Foams for NIF Hohlraum Wall Heating Experiments
D. Malone (34)	Measuring bond strength of CFTA at cryogenic temperatures
T. Marcotte (35)	Evolution of Equation of State (EOS) Target Design and Assembly
W. Montgomery (36)	Fabrication of First Lead & Depleted Uranium Laser Entrance Hole (LEH) Insert for Viewfactor Campaign
A. Murphy (37)	Developments in HiZ PP Fabrication

Tuesday, August 27th, 2024

Conference Day 2

6:45 – 7:45 AM	**Breakfast** (provided) **Location**: Bahia Patio (next to Lobby) at the Bahia Resort Hotel
Session 4: Ignition Targets **Session Chair: Michael Stadermann, LLNL**	
8:00 – 8:20 AM	Overview of HDC Capsule Processing Mark Ratledge, GA
8:20 – 8:40 AM	High Z and Petal Defect Identification and Metrology in High Density Carbon Capsules for Ignition Shots on NIF

	Abbas Nikroo, LLNL
8:40 – 9:00 AM	GA Component Fabrication Supporting Ignition Targets Mike Mauldin, GA
9:00 – 9:20 AM	Target Engineering Post-Ignition Scott Winters, LLNL
9:20 – 9:40 AM	The Advancement of a Cationic Capsule Fill Tube Assembly (CFTA) for The National Ignition Facility (NIF) Jay Crippen, GA
9:40 – 10:00 AM	Improvements to high density carbon capsule quality and availability for the inertial confinement fusion program Sal Baxamusa, LLNL
10:00 – 10:15 AM	Break
Session 5: Capsules **Session Chair: Sean Regan, LLE**	
10:15– 10:35 AM	Overview of Omega Capsule Fabrication for Direct Drive at General Atomics Claudia Shuldberg, GA
10:35 – 10:55 AM	Improvement of Capsule Mode 1 through Experimentally-Enhanced Monte Carlo Modeling Sean Hayes, LLNL
10:55 – 11:15 AM	Correlation of Macroscopic and Microscopic Properties of Tungsten Doped Nanocrystalline Diamond Coatings Juergen Biener, LLNL
11:15 – 11:35 AM	Effects of Pyrolysis on Glow Discharge Polymer (GDP) Capsules Anthony Allen, GA
11:35 – 11:55 AM	PAMS mandrels synthesis improvements Pauline Valois, CEA
12:00 – 1:00 PM	Lunch Break (Provided) Location: Bahia Patio (next to Lobby) at the Bahia Resort Hotel
Session 6: Metrology **Session Chair: Sal Baxamusa, LLNL**	
1:00 – 1:20 PM	4PI Wall Thickness Measurements of HDC and GDP capsules Pasha Lapa, GA
1:20 – 1:40 PM	Tender X-ray microtomography at the Advanced Light Source Jean-Baptiste Forien, LLNL
1:40 – 2:00 PM	Working to Improve the Dimensional Quantification of Target Metrology from X-ray CT Imaging Brian Patterson, LANL
2:00 – 2:20 PM	Development of Soft X-Ray Metrology Equipment for X-Ray Opacity Database Revision Ruben Santana, GA
2:20 – 2:40 PM	Digital Holographic Surface Metrology for HED Capsules Kevin Sequoia, GA

Thank you to our Platinum & Gold sponsors:

2:40 – 3:00 PM	Characterization Capabilities of Target Fabrication at Orion Jebin Jestine, AWE
3:00 – 5:00 PM	Break and Poster Session II
Poster Session II	
A. Nikroo (40)	Sub-micron Glue Thickness Measurement & Uncertainty Determination for Dynamic Material Expts on NIF
A. Nunez (41)	High Precision Machining of Hard-to-cut materials with the Ultrasonic Tooling Systems
C. O'Connor (42)	Capabilities and Challenges of the Target Fabrication Science team at AWE/Orion
D. Orozco (43)	Defect Detection for ICF Capsules using Deep Neural Networks
M. Hoppe (44)	Smooth High at% SiCH and Ultra-thin SiCH Capsules
I. Ruiz (45)	Reducing Oxygen Absorption in Si-Doped GDP Capsules by Improving Storage Conditions
D. Paras (46)	Overview of Diagnostic Assemblies in a Complex Hydro Target
A. Pastrnak (47)	Fabrication of Metal-to-Metal Interface Targets for Material Strength Experiments
B. Paul (48)	Thin Film Metrology and Processing Improvements at Luxel Corporation
April Perez (49)	Thin Flim (tent) Preparation and Target Tenting in Support of Production and R&D Efforts
T. Phipps (50)	Overview of new GA machined target component designs
M. Ponce (51)	Assembly of Visar and 1DConA ESPADA Targets for the HED ESPADA Campaign
T. Quintana (52)	Foam Characterization at LANL Using Computed Tomography
O. Raphael (53)	Assembly and Characterization of EOS Targets for LMJ Experiments
T. Reuter (54)	Techniques for Increasing Foam, Plastic, and Foil Yield
M. Rich (55)	Identification of Voids & Inclusions in Z Targets
C. Richardson (56)	Impedance Match and Hohlraum development
J. Riddles (57)	Target Fabrication of Colliding Planar Shock Targets
K. Rivadeneira (58)	Enhancing Yield and Performance Through Process Engineering in Target Fabrication
N. Roskopf (59)	Utilizing Creo Parametric IGES Files to Automate Target Specification Sheets
D.J. Ross (60)	Gradient Coating of Cylindrical Targets
S. Pajoom (61)	4PI Pre-Screen Process Improvements
A. Schwartz (62)	Examining the Degradation of Depleted Uranium Layered Hohlraums
R. Smith (63)	Polymer Selection for Target Fabrication
L. Sohngen (64)	Investigation of Titanium as a Surrogate Material for Magnetron Sputtered Beryllium

S. Stadermann (65)	Metrology of shielded ARC targets using mirror reflection in OCMM
S. Stringfield (66)	Development of 2PP Lattices & AR Coatings for use in Bosque Shock Imprint & Bosque Preheat
J. Stutz (67)	Laser Micromachining Process for Pinholes and Collimators Used for X-Ray Imaging
J. Taylor (68)	Z-Machine Cryogenic Target Performance Advances and Innovations
G. Taylor (69)	Boron carbide coatings deposited with HiPIMS
N. Thompson (70)	(Re)Development of a CFTA Producton Station at LLNL
K. Tomlinson (71)	4-Axis Milling of Planer Targets For Dynamic Materials Properties Experiments
T. Uphill (72)	Innolite 500 Sinewave Project
I. Usov (73)	Detailed analysis of opacity foils areal density uncertainties by Rutherford Backscattering Spectrometry
N. Vargas (74)	Overview Diamond Like Carbon Coatings
D. Wasilewski (75)	3D PRINTING CAPABILITIES USED BY TARGET FABRICATION AT THE LABORATORY FOR LASER ENERGETICS
M. Weir (76)	Overview of Coating Fabrication Capability Expansion at General Atomics
C.H. Wong (77)	Development of Aerogels and Foams for LANL Target Assembly
J. Wu (78)	Capsule Data Improvements
R. Luo (79)	Fabrication and Characterization of Shimmed Capsules for OMEGA Experiments
J. Murray (80)	Hoppe Glass Shells Properties Synopsis

Wednesday, August 28th, 2024

Conference Day 3

6:45 – 7:45 AM	**Breakfast** (provided) **Location**: Bahia Patio (next to Lobby) at the Bahia Resort Hotel
Session 7: Novel Targets & Assemblies **Session Chair: Derek Schmidt, LANL**	
8:00 – 8:20 AM	LANL Target Fabrication and Development Derek Schmidt, LANL
8:20 – 8:40 AM	Target Production in Support of Z Pulsed Power Experiments Reny Paguio, GA at SNL
8:40 – 9:00 AM	Double Shell Development with Emphasis on Fill Tube Assemblies Nikolaus Christiansen, LANL

9:00 – 9:20 AM	Overview of Hohlraum Fabrication at General Atomics Lucy Aghaian, GA
9:20 – 9:40 AM	Developments of Gold Boron Thin Liner for LMJ Hohlraum S. Khieu, CEA
9:40 – 10:00 AM	Mantech Livermore Target Fabrication Adavances Nour Nijem, Mantech
10:00 – 10:15 AM	Break
Session 8: Foams **Session Chair: Jarrod Williams, GA**	
10:15– 10:35 AM	Manufacturing and Characterization Techniques for Double Cylinder Experiments at the National Ignition Facility Tom Day, LANL
10:35 – 10:55 AM	Advances in 2 Photon Polymerization for Target Fabrication at General Atomics Alex Haid, GA
10:55 – 11:15 AM	Fabrication of Robust Pure Metal Aerogels From the Plasma Phase Jarrod Williams, GA
11:15 – 11:35 AM	Ultra-Low-Density Metal Aerogels in Emerging Target Designs Tyler Fears, LLNL
11:35 – 11:55 AM	Micro CT applications in ICF target fabrication Lance Ulrich, LLE
12:00 – 1:00 PM	Lunch Break (Provided) Location: Bahia Patio (next to Lobby) at the Bahia Resort Hotel
Session 9: Inertial Fusion Energy **Session Chair: Cliff Thomas, LLE**	
1:00 – 1:20 PM	STARFIRE: Building towards inertial fusion energy with multi-institution collaboration Clement Goyon, LLNL
1:20 – 1:40 PM	Smaller lower-cost laser-fusion power plants utilizing a uniquely capable laser technology Steve Obenschain, LaserFusionX
1:40 – 2:00 PM	Multi-MJ target designs for Inertial Fusion Energy Alison Christopherson, Xcimer
2:00 – 2:20 PM	Wetted Foam Target Production for Inertial Fusion Energy Neil Alexander, GA
2:20 – 2:40 PM	UPLiFT: UK Targetry Strategy for IFE Martin Tolley, STFC Harwell
2:40 – 2:55 PM	Break
Session 10: Additive Mfg & New Target Materials **Session Chair: Sergei Kucheyev, LLNL**	
2:55 – 3:15 PM	Engineering of Thiol-Michael Resins for Two-Photon Printing Mitchell Anthamatten, LLE
3:15 – 3:35 PM	Boron carbide coatings for inertial confinement fusion ablators

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	Sergei Kucheyev, LLNL
3:35 – 3:55 PM	Two-photon polymerization and coherent anti-Stokes Raman spectroscopy for developing fusion targets Yongfeng Lu, Univ Nebraska
3:55 – 4:15 PM	Fully additively manufactured wetted foam capsule for inertial confinement fusion Widianto Moestopo, LLNL

Banquet

6:00 – 9:00 PM	**Banquet** Location: Williams D. Evans Sternwheeler 6:00 PM: Boarding 6:30 PM: Depart for bay cruise 7:00 PM: Dinner 8:30 PM: Dock 9:00 PM: End of Dinner Party

Thursday, August 28th, 2024

Conference Day 4

6:45 – 7:45 AM	**Breakfast** (provided) **Location**: Bahia Patio (next to Lobby) at the Bahia Resort Hotel
Session 11: Advanced Target Concepts **Session Chair: Steve Obenschain, LaserFusionX**	
8:00 – 8:20 AM	High-entropy alloys for next-generation Hohlraums D. Goodelman, LLNL
8:20 – 8:40 AM	Observation of Proton-Boron Fusion Reaction from Decaborane Target Irradiated by LFEX Laser Atsushi Sunahara, BlueLaserFusion
8:40 – 9:00 AM	Advancement of Double Shell and PSS Shell Development Hongwei Xu, GA
9:00 – 9:20 AM	Fabrication and Characterization of NIF Lithium Salt Targets Corie Horwood, LLNL
9:20– 9:40 AM	Fabrication of copper containing deuterated material target for laser plasma diagnostics Kohei Yamanoi, ILE
9:40 – 9:55 AM	Break
Session 12: Machine Learning, Future Concepts, Systems	

Session Chair: Gilbert Collins, GA	
9:55 – 10:15 AM	Overview of Machine Learning Applications in ICF Capsule Metrology Matt Quinn, GA
10:15 – 10:35 AM	Precision milling of ablator materials with ion beams S. J. Shin, LLNL
10:35 – 10:55 AM	Tape Drive Target Delivery System Commissioning on GALADRIEL at General Atomics Gilbert Collins, GA
10:55 -11:15 PM	Innolite 500 Sinewave Project Thomas Uphill, AWE
11:15 – 11:35 PM	Accelerometer-based monitoring of HDC capsule polishing Suhas Bhandarkar, LLNL
	End of Conference