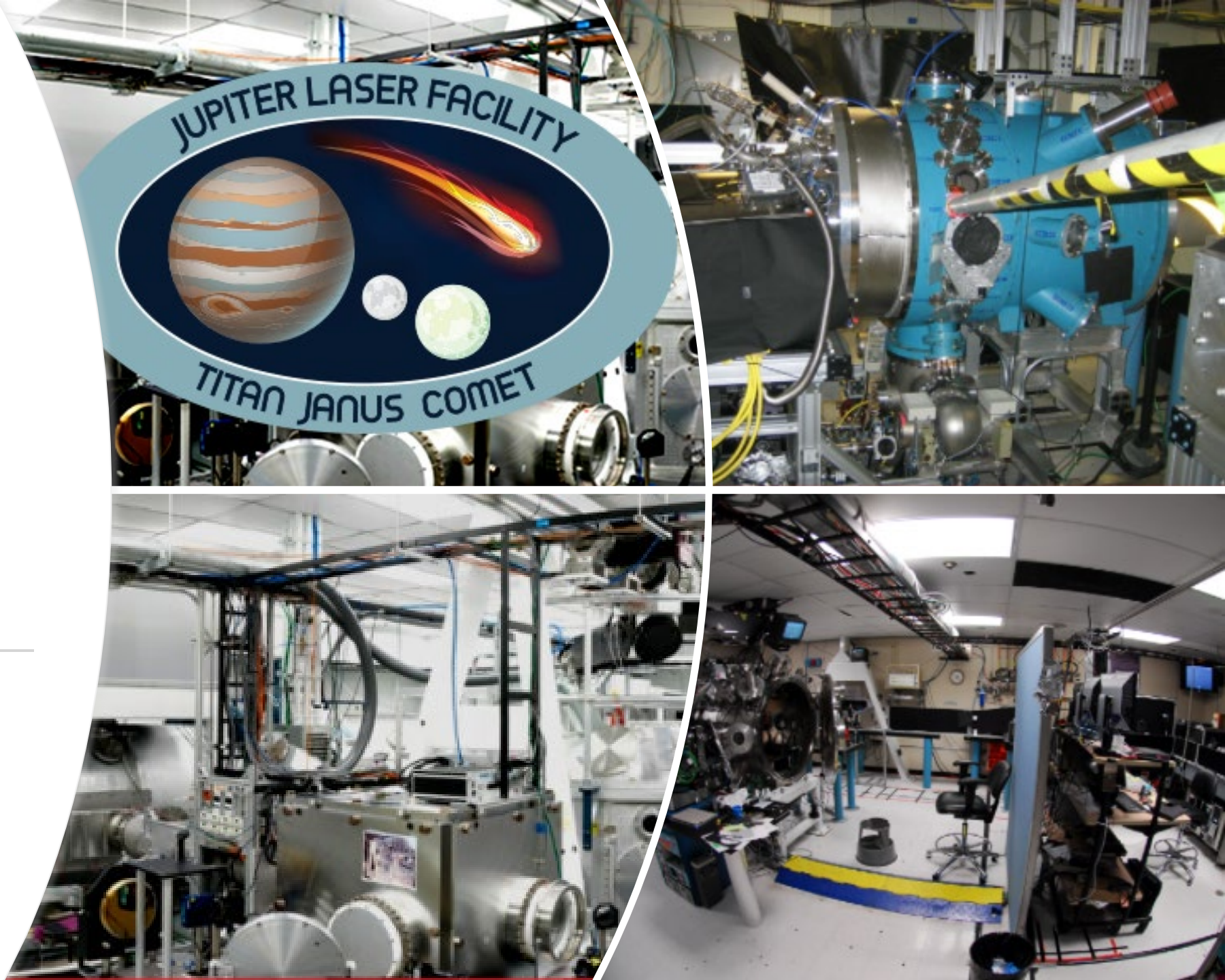
Jupiter Laser Facility 2025



Jupiter Laser Facility

Félicie Albert
Director for Science and Technology
Jupiter Laser Facility

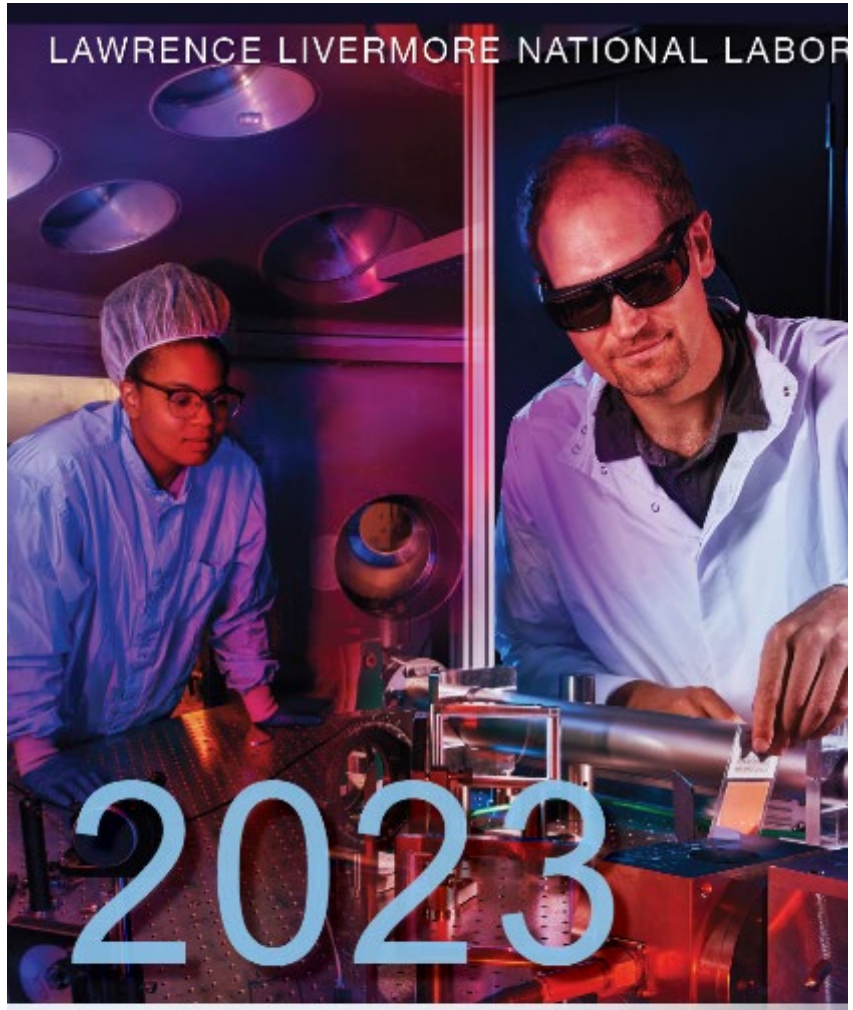
- JLF consists of three operating laser systems and target areas — Janus, Titan and COMET — and a main laser bay, consisting of three different beams: two long pulses and one short pulse.
- JLF includes the fifth-highest energy laser in the U.S.
- More than 100 Ph.D.s granted from JLF work
- The number of JLF users tripling from 2008 to 2017

Associate Deputy Director of Operations Sandra Brereton, Strategic Deterrence Deputy Director Brad Wallin, S&T Deputy Director Pat Falcone, Physical and Life Sciences Principal Associate Director Glenn Fox, NIF & Photon Science Principal Associate Director Jeff Wisoff and Jupiter Laser Facility Director Félicie Albert cut a ribbon for the reopening of the Jupiter Laser Facility. (Photo: Blaise Douros/LLNL)

COMET

Janus

Titan



Jupiter Laser Facility

Strategic Plan

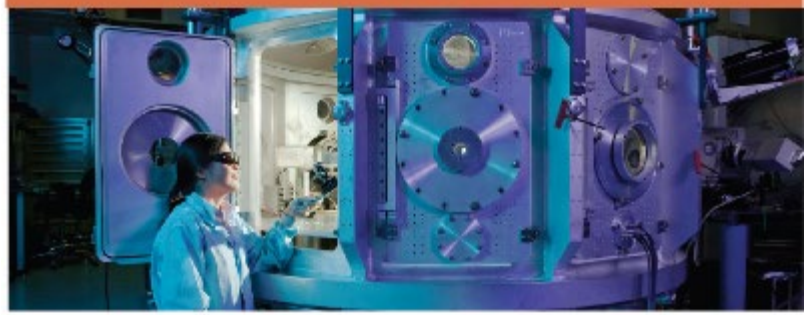
3 *operating laser systems/target areas*

5TH *highest energy research laser in the US—total of* **2 kJ**

20-25% *of all JLF users are students*

95% *new scientists have remained in the HED field*

JANUS *built in* **1974**



USERS COME FROM

4 *LLNL Directorates*

63 *Universities*

24 *labs & non-academic institutions*

- Janus expanded to become JLF in 2006
- More than 100 PhDs have been granted that included thesis work at JLF, and several of these students have earned dissertation awards
- Acknowledged in over 200 peer-reviewed journal articles, including:
- More than 40 high-impact publications
- More than 75 long articles

GOALS

NEAR-TERM

- Explore tritium, uranium capability
- Develop neutron sources with current capabilities
- Bring Titan to 300 J at shortest pulse duration
- Field magnetic recoil spectrometer and nuclear activation measurement capability

NEAR-TERM IMPACT

- Study nuclear reactions to understand key issues in fusion and plasma science

LONG-TERM

- Three types of lasers: Joule class, kHz, 100's joule, 10 Hz, kJ-class, shot/min
- Dedicated suite of diagnostics
- Handling of certain nuclear materials

LONG-TERM IMPACT

- Production of a broad set of neutron sources for mission-relevant applications
- Bright gamma-ray sources for detection of special nuclear materials, photo-fission, isomer production

Thanks

A huge thank you to

- Christine Mariscal (GA),
- Amina Hussein (University of Alberta)
- Pia Valdivia, UCSD

New Committee

Chair Ben Ofori-Okai (SLAC)
Vice Chair Nick Beier (U. Alberta)
Past Chair Tom White (U. Nevada, Reno)
Titan Rep. Chris McGuffey (GA)
Comet Rep. Andrew Longman (LLNL)
Janus Rep. Gaia Righi (LLNL)
Bella Pagano Student Rep. (U. Texas)
Lab. Rep. Jackson Williams (LLNL)








This year we received many comments from users directly discussing how helpful the staff have been.

"Stephen Maricle went above and beyond in re-aligning the probe line and should be recognized for exceptional support."

"All the staff that help us provided excellent support (Rick, Nicky, Jonathan & Stephen)"

"Gaia Righi was superb!!"

"Rick helped us most of the days and his knowledge and experience were critical for us to achieving our goals."

"Rick Cross was fantastic during our entire run!"

Wednesday Morning Jupiter Laser Facility Session

Session 3: Jupiter Laser Facility
Chair: Bella Pagano, University of Texas Austin

8:00 am	***Opening Remarks*** Felicie Albert, Lawrence Livermore National Laboratory Tom White, University of Neveda Reno
8:10 am	***TBD*** Elizabeth Grace, Lawrence Livermore National Laboratory
8:30 am	***Laser-Plasma Doping as A Tool for Material Research: From Quantum Emitters to Superconducting Diamond*** Arun Persaud, Lawrence Berkeley National Laboratory
8:50 am	***Single Line-Of-Sight Multimodal Radiography with The Titan Laser*** Matthew Selwood, Lawrence Livermore National Laboratory
9:10 am	***Investigating the Electrical Conductivity and Dielectric Properties of Compressed Hydrocarbons Using Ultrafast Terahertz Radiation*** Eric Sung, Stanford Linear Accelerator Center
9:30 am	***Tensile Strength of High Entropy Alloys by Pulsed Lasers On Janus*** Sheron Tavares, University of California San Diego
9:50 am	***Mode Conversion of The COMET Laser And Probing Intense Magnetic Fields in Underdense Plasmas*** Andrew Longman, Lawrence Livermore National Laboratory
10:10 am	***Break***
10:30 am	***JLF Updates and Overview*** Félicie Albert, Lawrence Livermore National Laboratory
11:30 am	***Community Feedback and Discussion*** Tom White, University of Neveda Reno
12:30 pm	***Lunch (Transitioning into The Poster Session)***

See you there!