Jain Lab Facilities (Email [jainlabs@googlegroups.com](mailto:jainlabs@googlegroups.com) to get access)

**Wetlab (CLSL A231)**

- Vacuum Atmospheres OMNI-Lab Argon glovebox
- Two fume hoods, one with operational Schlenk line
- Barnstead Nanopure deionized water purification system
- Eppendorf Centrifuge 5804
- Shimadzu UV-3600 UV-VIS-NIR Spectrophotometer (190–3300 nm) with variable temperature (0–100 °C) achieved by a Cole-Parmer Polystat constant temperature circulator
- Cary Eclipse fluorescence spectrometer (200-800 nm)
- MTI Corporation VTC-100 Vacuum spin coater
- Hotpack furnace (0–800 °C) and VWR gravity oven (0–300 °C)
- UVP UVGL-15 Compact UV Lamp (254/365 nm, split tube, 4 W)
- Bio-Logic SP-200 Potentiostat with VMP-300 multi potentiostat supporting currents between 10 nA and 1 A and Controlled Environment Sample Holder (CESH) temperature-controlled sample chamber
- Temperature-dependent X-ray diffraction (XRD) sample stage
- Ohaus PA153, 1 mg resolution balance
- Branson 3510 ultrasonication bath
- Glas-Col Mantle-Minder thermocouple and heating unit attached to a vacuum hotplate for cleaning substrate-coated samples by baking

**Optics Lab (CLSL A233)**

- Two large (4’x8’ and 5’x10’) with semi-active vibration isolation optics tables and one Small (4’x2’) optics table
- Two diode-pumped solid-state lasers for lasing at 532 nm
  - UltraLasers CST-HV-532nm-2W
  - UltraLasers CST-H-532nm-1.5W
- Two diode lasers for lasing at 445 nm
  - UltraLasers CST-H-445nm-1W (max around 200 mW now)
  - UltraLasers MDL-III-445nm-1W
- Olympus IX-71 inverted microscope equipped for epi-fluorescence and prism-based TIRF imaging with Andor iXon 897 CCD
- Olympus IX-51 inverted microscope for spectro-microscopies (dark field, transmission optical absorbance, epi-fluorescence, and Raman scattering) with a Princeton Instruments SP2300 spectrograph and Pylon100B CCD, Equipped with Raman filter for 532 nm excitation.
- Setup for visible-light photocatalytic studies compatible with irradiation by one of the lasers listed above or a Stryker X6000 300 W Xenon white-light source, coupled to a Fiber Optic of 5 mm to 10 ft (Stryker 233-050-084), and a linear variable visible wavelength range filter.
- Quartz spectroelectrochemical cell for spectroelectrochemistry and photoelectrochemical cyclic voltammetry measurements. The cell is equipped with a Pt working electrode, a glassy carbon counter electrode, and Ag/AgCl (aqueous and organic) reference electrodes and driven by potentiostat.
Three photoelectrochemistry-compatible cells with a Nafion separation (H-type cell). The cells are equipped with two quartz windows for studies with light and each cell can employ either a two or three-electrode system using a working electrode (L-Shaped GCE, GCE, or AuE), a counter electrode (Pt mesh, graphite rod 99%), and a reference (Hg/HgO or Ag/AgCl with three different chloride solutions) electrode.

DY2100 Digi-Ivy potentiostat, supporting currents between 20 nA to 2 mA with a potential interval of ± 2 V.

CH Instruments (CHI 650a Potentiostat/Galvanostat) electrochemical work station, supporting currents between 10 pA to 250 mA with a potential interval of ± 10 V.

Agilent 6850 gas chromatograph with split/splitless inlet and flame ionization detector for small-molecule detection

Agilent 7820A gas chromatograph with purged packed inlet and thermal conductivity detector