

Research Environment

Michelson Center for Convergent Biosciences

The \$255M Michelson Center for Convergent Biosciences is the largest research-only complex at USC and was completed in fall 2017. It is located in the center of the USC campus and houses researchers from numerous disciplines (biology, chemistry, physics and several fields in engineering). The O'Brien Nanofabrication Laboratory (ONL) core user facility is located in this building.

Facilities

USC O'Brien Nanofabrication Laboratory

The O'Brien Nanofabrication Laboratory opened in summer 2021 and is located in the basement of the new Michelson Center for Convergent Biosciences. This ~10,000 sqft central-user microfabrication facility is a blend of Class-100/1000 cleanroom which meets stringent specifications on the control of acoustics, cleanliness, electromagnetic interference (EMI), and environmental vibrations. The equipment selection is designed to fabricate nanodevices for a wide range of applications. This facility houses: lithography equipment, characterization equipment, and deposition and etching tools.

To facilitate core laboratory management and billing, USC provides access to a pair of software: Nemo and Priority. Nemo supports equipment training, reservation, activity, and status. Priority FBS supports grant/contract billing and payment for services and goods supplied by core labs and other research recharge centers. Once users are set up, any core-related charges for products and services can be tracked, reviewed, billed, and paid online. This pair of software greatly streamlines user access and improves grant management.

Equipment

O'Brien Nanofabrication Laboratory

Lithography

- Suss MJB3 (x2)
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- Suss MA/BA Gen4
- e-beam Raith EBPG 5150

Etching

- Oxford Pro 80 RIE (Si, SiO₂, Si₃N₄)
- Oxford Plasmalab 100 ICP (Si Bosch process)
- Oxford Plasma Pro 100 Cobra 180 (III-V)
- STS-ICP (GaAs, InP, GaN)
- XeF₂ (Si)

Deposition

- Oxford Pro 100 PECVD (SiO₂, Si₃N₄, SiO_xN_y)
- Lesker PVD 75 (Ti, Au, Pt, Pd, Cr, Ni, Ag)
- Lesker PVD 75 sputtering (Au, Pt, Ti, Al, W, Mo, Cu, SiO₂, Al₂O₃, ITO)
- Angstrom (ebeam and ion milling)
- Temescal (Ti, Au, Pt, Pd, Cr, Ni, Ag)
- Slaon (ITO, SiO₂, Al₂O₃)
- CHA (arriving fall 2021)

Other Processing

- RTA
- Lattice gear rapid cleaver
- Disco dicing saw
- 4 point probe
- Tube furnaces
- Spinners

Characterization

- Bruker DektakXT profilometer
- Phenom Prox SEM with EDS
- Nikon LV 150 (Optical microscope)
- JEOL 6700F SEM with EDS