

# General Policies and Access Procedures for BME Microfabrication Facility

V1.5 March 13, 2019

## 1. Administration

The BME microfabrication facility is administered and maintained by Dr. Jeffrey Zahn. He is the primary point of contact for facility access, training and policing of facility policies.

Dr. Jeffrey Zahn            848-445-6587

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## 2. Basics

The microfabrication facility enables device fabrication with an emphasis on producing microfluidics and BioMEMS platforms. The facility is equipped with a spincoater, contact mask aligner, physical vapor deposition DC sputtering system, parylene chemical vapor deposition system (available outside the cleanroom), plasma generator, XeF<sub>2</sub> silicon etching system and miscellaneous processing and analysis equipment. Only approved materials are allowed in the facility. If you wish to have a material approved contact Dr. Zahn.

## 3. Facility Costs

The microfabrication facility is available to Rutgers investigators at a cost of \$25/hour for facility access or \$25/use for the parylene deposition system. All personnel working in the facility will be required to sign in and out in a logbook to track usage. Failure to account for facility usage time will result in revocation of access privileges. The funds generated from facility usage fees are used to defray costs associated with stocking the facility with basic supplies (e.g., solvents, some photoresists, gowning, etc.) and equipment maintenance (e.g., pump rebuilding, metal targets, XeF<sub>2</sub>, power supplies, maintenance calls).

## 3. Access

When access to the microfabrication facility is requested for a project participant, the request must be submitted by the PI in writing using the access form appended to these policies. Emailed requests (to Dr. Jeffrey Zahn jd Zahn@soe.rutgers.edu) are accepted from the PI or their designate but must indicate that the PI is copied on the message and has signed the access document.

- a) The personnel will then be provided with a facility user orientation.
- b) Undergraduate students may NEVER enter or work in the facility without graduate student supervision. They may NEVER operate equipment alone.
- c) For safety reasons, personnel cannot use the facility alone without at least one other graduate student in the laboratory area. During off hours, the personnel must notify other persons they are using the facility (especially if only two students are in the laboratory area).
- d) Personnel cannot use equipment without proper training and certification. Once a user has been trained and demonstrates proficiency in using equipment safely and correctly they will be certified to use equipment unsupervised. Improper usage of equipment can pose a safety hazard as well as resulting in equipment damage which can be costly to repair.
- e) Personnel and their supervising PI will sign and date a hardcopy of this document indicating they understand and agree to abide by these rules. Access will then be granted.

f) Failure to adhere to these guidelines will result in access being curtailed or revoked for users or principal investigators.

#### 4. Gowning

Personnel gown in the gowning room.

- a) Personnel must wear long pants and closed toe shoes whenever entering the facility.
- b) The gowning room is split into a dirty side and clean side by a bench.
- c) Personnel should step on the sticky mat on the dirty side to remove debris from their shoes.
- d) Gowning is from top to bottom to shed debris onto the floor on the dirty side of the room. First put on hair cover, then cleanroom coat, then shoe covers and gloves prior to entering facility.
- e) To put on shoe covers sit on bench with legs on the dirty side of the gowning room. Lift one leg and put on a shoe cover. Swing legs over to the clean side keeping the uncovered foot off the ground and stepping down with the covered foot. Put on the second shoe cover and step down.

#### 5. Equipment Training

The personnel must be trained on each piece of equipment they wish to use and cannot use equipment independently until they receive user status.

- a) Equipment training is provided by Dr. Zahn or a qualified equipment user.
- b) Personnel are required to read and understand equipment SOPs available at <http://biomems.rutgers.edu/facilities.html>.
- c) Personnel will be granted user status once they are deemed proficient in understanding equipment usage, maintenance and safety

#### 6. Facility Usage and Equipment Scheduling

Equipment access is on a first-come/first-serve basis. Equipment usage is track by computer logs on the equipment and facility access log.

- a) A image of the facility access log is shown below

User(s)	Principal Investigator	Date	Time in	Time out
<b>Equipment used</b>				
<input type="checkbox"/> Spincoater <input type="checkbox"/> Mask Aligner <input type="checkbox"/> Sputtering <input type="checkbox"/> Plasma Etcher <input type="checkbox"/> XeF <sub>2</sub> etcher <input type="checkbox"/> Profiler <input type="checkbox"/> Miscellanea				
<b>Comments</b>				

- b) When entering the facility, all users must sign into the facility, indicate their laboratory PI, and the time in.

c) When signing out of the facility, all users must indicate their time out and check boxes for equipment they used when in the facility and any comments about equipment problems. (This will help us track down users for discussion when equipment problems arise).

d) Failure to sign in or out of the facility will result in a full day (8 hours; \$200) invoice charge.

### **7. Facility Maintenance**

It is the researcher's responsibility to leave the facility in a clean condition

a) Following use, personnel must clean up their workspace and dispose of any processing chemicals in their proper manner.

b) The researcher shall wipe down all surfaces used in the facility; especially cleaning the spinner bowl of photoresist residue.

c) Work surfaces shall be cleaned from cleanest to dirtiest areas.

d) It is the user's responsibility to go 'above and beyond' in cleaning the facility to leave the facility cleaner than they found it. This means spending a few minutes of additional cleaning such as cleaning the floor or picking up debris (glass or wafer shards, dust bunnies, etc.)

e) Any equipment issue must be reported to Dr. Zahn immediately.

### **8. Equipment & Supplies**

There is limited space in the microfabrication facility. Materials may be stored in plastic containers on shelving located within the facility

a) The cleanroom will be stocked with limited supplies. These will include: gowning materials, gloves, wipes, solvents, heavily used photoresists and developers.

b) Personnel should provide additional supplies on their own (wafers, other photoresists, etc.).

c) Do not use supplies that are not yours without specific permission.

### **9. Equipment Damage and Repairs**

Equipment repairs can be quite costly. Personnel will be held responsible for improper use of equipment resulting in damage (intentional or not).

a) Repairs required due to improper equipment use will be the responsibility of the user's Principal Investigator or research mentor.

Particular concerns are:

Issues with over-extending stage movement in the mask aligner can result in a broken, immobile stage. Improper PVD chamber pressure can result in vacuum pump failure.

Improper PVD sputtering power can cause electrical damage to equipment (as well as a safety hazard)

b) Personnel may have access privileges curtailed or revoked for negligence

### **10. Billing**

a) Cleanroom usage will be charged at a rate of \$25/hour or \$25/use for the Parylene deposition system.

b) Principal investigators are required to provide a project ID fund number when requesting access. If the project ID number changes they should notify Dr. Zahn.

c) Charges will be invoiced to the Principal Investigator approximately once per semester. Failure to pay facility charges will cause the invoice to be billed against the supplied project ID and will result in loss of facility access.

If you have any questions or concerns, please contact Jeffrey Zahn [jd Zahn@soe.rutgers.edu](mailto:jd Zahn@soe.rutgers.edu)

**Usage Request**

Please provide a short description of your planned processes/equipment usage in the BME Microfabrication facility.

**Acknowledge/consent**

I have read and fully understand the rules written above. I understand that there is a 'zero tolerance policy' regarding failure to comply with the above, and that I risk losing access privileges to the facility if I am in violation of the above.

User Consent

\_\_\_\_\_  
User Printed Name and Signature

\_\_\_\_\_  
Date

Principal Investigator Consent

\_\_\_\_\_  
PI Printed Name and Signature

\_\_\_\_\_  
Date

Invoices may be charged to the following project ID \_\_\_\_\_