Marvell Nanolab Lab Member Meeting, June 08, 2017

Meeting Minutes

10 researchers: emley2, minhe, samtsitr, bwestbro, liux, kcook, salmeida, artuico, mprost, skim1

11 staff: rdrivers, joanna, morford, bielecki, mullins, bob, pestal, adove, dhall, hemphill, kim

PR Track Updates:

1. PICOTRACK1/2 is up and running. SVGCOAT6 will be going DOWN on Monday, June 19th for maintenance. We hope to keep SVGDEV6 up as much as possible, but it may also need some down time for some maintenance.

2. New (planned) PR lines:

<table>
<thead>
<tr>
<th>SVGCOAT6</th>
<th>PICOTRACK1</th>
</tr>
</thead>
<tbody>
<tr>
<td>OiR 906-12 (i-Line)</td>
<td>Currently empty – thick PR (SPR or AZ 4260)</td>
</tr>
<tr>
<td>OCG 825 35CS (g-Line)</td>
<td>UV210GS-0.3 (thin deep UV)</td>
</tr>
<tr>
<td>UV210GS-0.6 (deep UV)</td>
<td>UV26-3.0 (thick deep UV)</td>
</tr>
<tr>
<td></td>
<td>OiR 906-12 (i-Line)</td>
</tr>
<tr>
<td></td>
<td>UV210GS-0.6 (thin deep UV)</td>
</tr>
</tbody>
</table>

This does depend on thick PR working in PICOTRACK1 – there are a couple of technical hurdles to make this happen. If we can’t get thick PR to work on PICOTRACK1, we’ll need to put it on SVGCOAT6 instead and we won’t have a backup for UV210-0.6.

3. We are aiming for SVGCOAT1/2 and SVGDEV1/2 to be removed from the lab in late June, early July.

4. SVGCOAT3 is the only track that will move – it will be placed between PICOTRACK and SVGCOAT6.

Chemical Glove Updates:

1. The single use chemical gloves were deployed and were highly successful. However, while sitting out in the lab they developed wear marks along the folds and pinholes along those wear marks. The defective gloves are being sent back to the manufacturer for review. This may have been a bad lot – if not, we will canvass other manufacturers. We did extensive chemical testing of the gloves before deployment, but we did not think to do a physical test of gloves just sitting in the lab. We will do this before redeploying gloves.

2. Qualification and Member Startup:

1. In an effort to better assist lab member start up (and expectations) in the lab, staff have created new orientation slides and a new lab manual chapter. The member lifecycle slide is shown
Phase 1: Outreach (1-3 Weeks)
- Primary Focus: Read manuals and make professional contacts in the lab.
- Secondary Focus: Design your process flow and determine needed tools.
- Ask your group, other experienced members, and process engineers for help getting started!

Phase 2: Skill Building (3-10 Weeks)
- Primary Focus: Acquire qualifications on your tools
- Secondary Focus: Troubleshoot design via short loops and test films
- Ask your group, other experienced members, and process engineers for guidance!

Phase 3: Research and Development (Length of Project)
- Primary Focus: Make your device!
- Secondary Focus: Complete skill building for other areas and future needs.
- Tertiary Focus: Pay It Forward – Help people needing guidance and give feedback to staff.

Phase 4: Mentoring and Superusers (Ongoing)
- Primary Focus: Refining your understanding, implementing new designs
- Secondary Focus: Expanding skill in other processing techniques
- Tertiary Focus: Living Library – Help people needing guidance and give feedback to staff.

You Are Never Done Learning
2. In an effort to better assist lab member start up in the lab, staff have also established five separate qualification categories: Walk-Up, Basic, Exam, Workshop, and Specialty. This is not a change in qualification, but better reflects the existing qualification procedures on individual tools. Staff has been charged with updating manuals to reflect the training procedure for each tool.

3. Workshops are currently required before training on any evaporation or etch tool. Staff plans to increase the number of workshops to include:
   a. Lithography
   b. Sinks
   c. CVD/Furnaces
   d. Metrology
   e. Sputtering

   Planned workshops would be offered online (technology tests to be taken in the office). Workshops and technology tests are taken only once per technology and typically never expire.

**Member Comments:**

1. Failing a test doesn’t tell you what you got wrong.
   a. Can the system give feedback without risking cheating?
b. Can the order of questions/answers be randomized to prevent “the answer to question 3 is c” kind of cheating?
c. Response to comments about cheating: cheating is not an issue. We are trying to convey information and train, not grade.

2. Can members be told which question(s) they got wrong without the answer so they at least know what to study?
a. Computer group will review grading/wrong answer and try to either tell you what you got wrong or what the correct answer is. Staff may still require an in-person review before you can retake the test.

3. We are adding a study guide section to each manual.
4. Recommendation to members: get trained with the study guide in hand.
5. Can superusers have a checklist before qualifying someone on a tool?
6. Should we be canvassing members at intake to get a sense of their experience?
7. There is a disconnect between when people do one-on-one training on a tool and how we intake people at orientation. We can easily lose track of members who have no background in cleanrooms.
8. Recommendation to members: Email someone individually.
9. Recommendation to members: Take written notes. If you aren’t taking written notes, your trainer has no expectation that you are taking this seriously.

General Lab Comments:

1. Can we have a de-scum unit on the 3rd floor (convenient to lithography) or can there be an oven upstairs?
   a. There is a de-scum unit on the 3rd floor – YESG500 is an asher in 380. This may require moving equipment to improve workflow.
2. Can there be a second microscope on the 5th floor
   a. Greg Mullins is actively working on it, but has had a few technical issues to resolve.
3. Can the dark field microscope on XETCH be removed and given a useful mount elsewhere?
4. MSINK18 is great – make it happen on MSINK16.