Standard Operating Procedure

Use of the High-speed Centrifuge and Swing-bucket Centrifuge and Table-top Microcentrifuge

Department: Chemistry & Chemical Biology
Date SOP was written: July 1, 2014
Date SOP was approved by PI/lab supervisor: Andy LiWang
Reviewed by: Andy LiWang
Principal Investigator: Andy LiWang
Internal Lab Safety Coordinator/Lab Manager:
Lab Phone: 209.228.4630
Office Phone: 209.228.4631
Emergency Contact: Karen Smith 209.205.8176
Location(s) covered by this SOP: Castle 1201 Suite 920

Type of SOP: X Process □ Hazardous Chemical □ Hazardous Class

Purpose
This SOP covers the use of high-speed centrifuge, swing-bucket centrifuge, and table-top microcentrifuge.

Summary of Significant Health and Physical Hazards
- Using high-speed centrifuge and swing-bucket centrifuge improperly will cause major physical injury.

Personal Protective Equipment (PPE)
- Gloves
- Safety Eye Goggles
- Lab Coats

Use of the High-speed Centrifuge and Swing-bucket Centrifuge

Date: 07/01/2014
- Closed-toe shoes

**Risk Assessment**

The overall health and safety risk for use of this material in accordance with the procedure and protocol in the following section is considered **LOW** based on:

- Serious injury from operating high-speed centrifuge and swing-bucket centrifuge is low because the equipment has emergency stop and a protection chamber to safeguard the user.
Protocol/Procedure

Preparatory Steps:

- Review special handling, decontamination, and waste disposal information in this SOP; and the emergency information contained in this SOP.

- Visually verify that access to the emergency eyewash/shower unit and the fire extinguisher are not blocked.

- Visually verify that access to the emergency exit door is free obstructions.

- Don the appropriate protective equipment.

Laboratory Procedure

Using of the high-speed centrifuge with **high-speed rotor SS-34, maximum speed is 20,000 rpm.**

1. Make sure you have been certified. If not, do not proceed. Ask adviser for training.

2. Make sure that the rotor is appropriate for the instrument and use the lid that matches the rotor.

3. Make sure sample tubes are appropriate for the speed required and also suitable for containing your samples.

4. Check tubes for signs of stress and/or crack. Discard tubes if found.

5. Place SS-34 rotor on to the spindle. Make sure no tilting. Make sure the rotor falls between the pins (not on top of them).

6. Balance all samples to be within 0.05 gram difference.

7. Dry the outside all tubes with paper towel and insert them in a balanced way into the SS-34 rotor.

8. Tighten the rotor lid very tightly. Test security of the rotor by lifting from bottom to make no movement is detected.

9. Close centrifuge chamber lid, set the rotor name to SS-34 first, then speed (usually 15,000 rpm), time and temperature.

10. Press start button, stay and observe until the desired speed is reached. Make sure no loud noise or vibration is detected. If abnormal noise or vibration is detected, press stop button and recheck everything.
11. When centrifugation is done, the centrifuge will alarm to indicate the completion. Open centrifuge lid, loosen rotor lid, take out sample, and remove rotor. Turn off power. Leave centrifuge lid open to allow drying.

12. Clean rotor in case of spill.

13. Wipe centrifuge with paper towel.

Using of the high-speed centrifuge with low-speed rotor FS-10, maximum speed is 10,000 rpm.

1. Make sure you have been certified. If not, do not proceed. Ask adviser for training.

2. Make sure that the rotor is appropriate for the instrument and use the lid that matches the rotor.

3. Make sure sample tubes are appropriate for the speed required and also suitable for containing your samples.

4. Check tubes for signs of stress and/or crack. Discard tubes if found.

5. Place FS-10 rotor on to the spindle. Make sure no tilting.

6. Balance all samples using uncracked centrifuge tube to be within 0.10 gram difference.

7. Dry the outside all tubes with paper towel and insert them in a balanced way into the FS-10 rotor.

8. Tighten the rotor lid very tightly. Test security of the rotor by lifting from bottom to make no movement is detected.

9. Close centrifuge chamber lid, set the rotor name to FS-10 first, then speed (usually 5000 rpm), time and temperature.

10. Press start button, stay and obverse until the desired speed is reached. Make sure no loud noise or vibration is detected. If abnormal noise or vibration is detected, press stop button and recheck everything.

11. When centrifugation is done, the centrifuge will alarm to indicate the completion. Open centrifuge lid, loosen rotor lid, take out sample, and remove rotor. Turn off power. Leave centrifuge lid open to allow drying.

12. Clean rotor in case of spill.

13. Wipe centrifuge with paper towel
Using of the swing-bucket centrifuge with **maximum speed is 4000 rpm**.

1. Make sure you have been certified. If not, do not proceed. Ask adviser for training.
2. Make sure that the rotor is appropriate for the instrument and use the lid that matches the rotor.
3. Make sure sample tubes are appropriate for the speed required and also suitable for containing your samples.
4. Check tubes for signs of stress and/or crack. Discard tubes if found.
5. Balance all samples to be within 0.10 gram difference.
6. Dry the outside all sample containers with paper towel and insert them in a balanced way into the sample holder inside the swing-bucket centrifuge.
7. Hold down the swing-bucket centrifuge lid for a few seconds in order to close the lid properly.
8. Set, speed, time and temperature. **Note: maximum speed is 4000 rpm.**
9. When centrifugation is done, the centrifuge will beep five times to indicate the completion. Open centrifuge lid, take out sample, and remove rotor. Turn off power. Leave centrifuge lid open to allow drying.
10. Clean rotor in case of spill.
11. Wipe centrifuge with paper towel

Using of table-top microcentrifuge with **maximum speed is 14,000 rpm**.

1. Make sure you have been certified. If not, do not proceed. Ask adviser for training.
2. Make sure that the rotor is appropriate for the instrument and use the lid that matches the rotor.
3. Make sure sample tubes are appropriate for the speed required and also suitable for containing your samples.
4. Check tubes for signs of stress and/or crack. Discard tubes if found.
5. Balance all samples to be within 0.10 gram difference.
6. Dry the outside all sample containers with paper towel and insert them in a balanced way into the sample holder inside the swing-bucket centrifuge.
7. Close the rotor lid properly.
8. Close the microcentrifuge lid
9. Set, speed, time and temperature. Note: maximum speed is 14,000 rpm.
10. When centrifugation is done, the centrifuge will beep five times to indicate the completion. Open centrifuge lid, loosen rotor lid, take out sample, and remove rotor. Turn off power. Leave centrifuge lid open to allow drying.
11. Clean rotor in case of spill.
12. Wipe centrifuge with paper towel

In the event of an injury, perform first aid and call 911 and report to Environmental Health and Safety at 209.228.4261.
**Documentation of Training** *(signature of all users is required)*

- Prior to conducting any work with the chemicals listed above, designated personnel must provide training to his/her laboratory personnel specific to the hazards involved in working with this substance, work area decontamination, and emergency procedures.

- The Principal Investigator must provide his/her laboratory personnel with a copy of this SOP and a copy of the SDS provided by the manufacturer.

- The Principal Investigator must ensure that his/her laboratory personnel have attended appropriate laboratory safety training or refresher training within the last one year.

I have read and understand the content, requirements, and responsibilities of this SOP:

<table>
<thead>
<tr>
<th>Name</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>