

Standard Operating Procedure (Polypropylene Reactor System)

Facility:	Polymer Reaction Engineering Laboratory Chemical and Biomolecular Engineering Department
Lab Director:	Prof. Kyu Yong Choi
Scope:	This SOP details the use of the Polypropylene Reactor system for work in the Polymer Reaction Engineering Laboratory.
Last Revision:	November 29, 2014 by Woo Jic Yang

Caution: The Chemicals and equipments used in this procedure are **hazardous and dangerous**.
Always wear heat gloves when handling equipment with high temperatures.
Always wear goggles, (face shield), rubber gloves, apron, closed toed shoes, etc.

System Operating Procedure

1. Turn on heating elements (Hot plate to set reaction temperature):
 - a. Place a large beaker with water and magnetic stir bar on the hot plate.
 - b. Place the thermocouple in the beaker making sure that it is submerged under water.
 - c. Set the desired temperature and RPM (stir bar rotation speed).
2. Prepare the high pressure glass reactor inside of the glove box:
 - a. Fill the reactor with the required volume of solvent (n-heptane).
 - b. Add Triethylaluminum (scavenger) and Methylaluminoxane (co-catalyst).
 - c. Add catalyst.
 - d. Put the reactor top on the reactor and tighten. Make sure that all the valves are closed.
3. Open the valves in the propylene gas line except for the last valve before the connection to the reactor.
4. Take the reactor out of the glove box and tighten the reactor top.
5. Place the reactor in the high temperature bath and connect the propylene gas line.

6. Start the reaction by opening the valve on the reactor top to let the propylene gas into the reactor.
7. After the reaction is complete, collect the reaction mixture in a glass beaker and add acidic methanol.
8. Clean out and dry the reactor and place the reactor assembly in the glove box for the next experiment.
9. Turn off the hot plate.
10. Place reactor in KOH solution to clean the reactor for next experiment.

Polypropylene Reactor System Policy

1. The Instrument is managed by Woo Jic Yang. If you would like to use the instrument, come to see Woo Jic Yang first. Use the instrument properly as described in the Polypropylene Reactor System SOP. If you find something wrong, alert Woo Jic Yang immediately.
2. Always wear protective equipment and handle with care when dealing with high temperatures.