

Standard Operating Procedure (Gel Permeation Chromatography)

Facility:	Polymer Reaction Engineering Laboratory Chemical and Biomolecular Engineering Department
Lab Director:	Prof. Kyu Yong Choi
Scope:	This SOP details the use of the Gel Permeation Chromatography 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 goggles, (face shield), rubber gloves, apron, closed toed shoes, etc.



Sample Preparation

1. Your sample needs to be highly purified. No corrosive chemicals, such as strong acids or bases, are allowed. Otherwise, it will permanently damage the instrument.
2. Dissolve 1-2 mg of your sample in HPLC grade chloroform at least one hour prior to measurement. There should be no precipitates in the chloroform solution; otherwise you need to filter the solution to remove the precipitates.

Instrument Operating Procedure

1. Sign the logbook.
 - a. Write the date and your name on the logbook. And describe your samples.
Record flow rate and pressure. The logbook is next to the instrument.
2. Turn on the binary pump (Waters 1525).
 - a. To set the flow rate and whether it will be single or binary pump system, use the Breeze software on the computer next to the instrument.
3. Turn on the Autosampler (Waters 717 Plus).
 - a. To load the samples, open the door on the bottom of the sampler and put the corresponding slot numbers in the Breeze software.
4. Turn on the UV detector (2487) and the RI detector (2414).
 - a. Increase the flow rate gradually. Don't jump the flow rate from low flow to higher flow rate at one time. If you do this, the column and the cells

may be damaged. You have to keep the flow rate at 0.1 ml/min when the instrument is not in use.

- b. Each time you make an adjustment to the flow rate (especially when increasing the flow rate), make the adjustments in gradual steps and make sure the pressure has been stabilized before making the next adjustment.
5. Wait until both the UV and RI detectors are stabilized.
 6. Wait at least 1 hour until the flow rate stabilizes.
 7. Run the Breeze software to analyze your samples.

GPC Instrument 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. You can request Woo Jic Yang to analyze your samples or be trained to become an authorized user.
2. Use the instrument properly as described in the GPC SOP. If you find something wrong with the instrument, alert Woo Jic Yang immediately.
3. Your sample needs to be completely soluble in chloroform. Otherwise, your sample will block the column and the instrument will need to be serviced.
4. Take your samples once you are done using the instrument. Multiple violations will result in the suspension of your GPC privileges.