

Competitive Specifications

The Advanced Materials and Processing Branch (AMPB) requires the purchase of an integrated gel permeation chromatograph (GPC) instrument to perform molecular weight determinations on developed materials. These materials are high-molecular weight polymers such as: polyimides and polyolefins. Molecular weight determination instrumentation requires high-temperature processing and harsh solvents as the mobile phase. The Contractor shall furnish the instrument with the following minimum specifications:

1. Shall have triple detection capabilities to include viscometry, refractive index (RI), and light scattering detectors.
2. Shall be capable of operating with n-methyl-2-pyrrolidone (NMP) and 1-, 2-, 3-trichlorobezene (TCB) mobile phases for extended periods at temperatures up to at least 150°C without damage to instrument components and detectors.
3. Column oven shall operate between room temperature (22°C) and 150°C.
4. Shall be equipped with dual zone, heated auto-sampler unit capable of operating at temperatures between room temperature and 150°C.
5. Pump reproducibility shall be better than 0.1% precision against column backpressure from room temperature to 150°C.
6. Oven chamber shall be able to contain all critical components: columns, detectors, and injection valve. Oven temperature shall have a drift of less than 0.05°C per hour.
7. System shall have the capability to be retrofitted with other detectors if needed in the same environmentally controlled compartment.
8. Safety features for solvent module shall include solvent leak detection, electronic interlocks, and automated controlled shutdown. There shall be a containment tray capable of holding all solvent in case of catastrophic failure.
9. Shall be supplied with GPC software package with triple detection, inlet and differential pressure signature, and multiple light scattering angle processing capabilities. Data streaming shall permit collection of up to 4 channels independently or simultaneously with continuous signal monitoring.
10. The Contractor shall install the instrument into the Solution Laboratory in B1293C, R266 and conduct on-site training, both of which shall be included in the total price of the unit.