

Within the work package WP4 – Upgrading research capacities, the Gel Performance Chromatography (GPC), Waters Breeze System, has been purchased and installed at the Department of Materials Engineering (DEMATEN), Novi Sad, Serbia. Young researchers have already been trained by an expert from Hemtek Company.

Gel Performance Chromatography (GPC) system measures molecular weight of dispersed molecules in solution (range for molecular weight $10^3 - 10^7$ Daltons). GPC requires an HPLC system that delivers precise flow. In GPC, the retention time is plotted against the log of the molecular weight, thus, flow rate variations become magnified exponentially in the calculated molecular weight distributions. Calculated molecular weights are obtained from an elution volume calibration curve generated using standards and plotted on a log scale. Any change in flow (elution volume as plotted on the linear X axis) will result in a large deviation in molecular weight (plotted as a log function on the Y axis). For a linear calibration curve, a 1% change in flow rate translates to a 10% change in calculated molecular weight. Waters Breeze System for GPC analyses offer flow precision of better than 0.10% (e.g. Retention time relative standard deviation (RSD) for polystyrene standards = 0.03% or better). This level of performance ensures excellent molecular weight reproducibility, producing weight average and number average RSD of below 1.5%.

Gel Performance Chromatography (GPC), Waters Breeze System (presented at figure bellow), consists of: isocratic manual RI workstation (isocratic pump, rheodyne manual injector, RI-detector, HPLC/GPC station), columns, column heater and support parts.

