

New device in TTK, Slovak-Hungarian Joint Laboratory: Modern gel permeation chromatograph

TTK AKI purchased a state-of-the-art gel permeation chromatograph (Advanced Polymer Chromatograph, APC) to determine the molecular weight distribution of biopolymers from Waters Kromatográfias Kereskedelmi és Szolgáltató Kft. The device can also be operated in ultra high pressure liquid chromatography (UHPLC) mode to separate and determine the composition of complex organic product mixtures.

The device operates up to a pressure of 1000 bar. It includes a quaternary gradient pump, a thermostatically sampled automatic sample dispenser, and refractive index (RI) and diode-array UV-Vis spectrophotometric detectors.

Modern and conventional gel permeation chromatography measurements can be performed in aqueous and organic media in the molecular weight range of 200 to 2,000,000 Da using ACQUITY APC AQ and ACQUITY APC XT columns. With small (2.5 μm) stationary phase, small (4.6 mm diameter and 150 mm long) columns and small cell volume (2.5 μl) detectors, faster measurements can be achieved than with the conventional gel permeation method, while resolution is also better and eluent consumption is lower. Three of the above columns can be placed in a smaller thermostat. The device is also suitable for conventional GPC measurements as it includes a larger thermostat for larger columns (7.8 mm in diameter and 300 mm in length).

In addition, a PREMIER BEH C18 AX column is available for reversed-phase UHPLC measurement for the analysis of sugars and its oxidation products.

With the help of the relational database-based client-server Empower software, up to 5 people can work in the system at the same time (control, data collection, data processing).

TTK AKI spent **€ 122 940** to buy the device from the project.

The service engineer of Waters Kft. (Pál Vőfély) put the device into operation on August 9, 2021. Following this, engineer Tamás Károly gave a one-day lecture on the use of Empower software on 31 August, and then Dr. Péter Kumli gave a theoretical and practical training on 8 and 9 September.



APC installation in TTK on August 6, 2021.