

Investigating the Properties of Novel Polymer Nanogels

TESTA Analytical Solutions e.K reports how researchers at Lodz University of Technology (Poland) have combined the advanced analytical capabilities of its GPC/SEC triple detection system with a BI-200SM light scattering goniometer to derive in-depth information about an exciting new generation of polymer nanogels.

Polymer nanogels with cross-linked structure

provide a versatile platform for storage and release of biologically active compounds. They offer a highly desirable method of loading and delivering active forms of drugs or proteins toward cells for remaining activity, enhancing stability, and avoiding potential immunogenicity of proteins. Reported promising applications of polymer nanogels include drug delivery agents, contrast agents for medical imaging, nanoactuators, and sensors.

For over 20 years,

the Division of Applied Radiation Chemistry in the Institute of Applied Radiation Chemistry at the Lodz University of Technology has been a leading research center for the synthesis of polymer nanogels.



Dr Slawomir Kadlubowski

the Associate Professor of the Division of Applied Radiation Chemistry said "To advance our characterization capabilities we have invested in a number of methods to analyze the physico-chemical properties of the polymer nanogels that we synthesize. This includes static and dynamic light scattering using a research grade goniometer and Gel Permeation Chromatography (GPC) with triple detection (MALLS, DRI, Viscometer). Combining these methods, we are able to determine changes in molecular weight and size (or their distribution) during synthesis and to have a full view on interactions between chain segments or macromolecules. This leads not only for understanding of mechanism of intramolecular crosslinking, which is a basic reaction for nanogel synthesis, but also to obtain product with the properties required by a specific practical application such as a drug delivery system. We chose to purchase the triple detection GPC system and the light scattering goniometer from TESTA Analytical not only because of the excellent performance and versatility of their systems but also because of the informed technical support they supply allowing us to get the best out of these instruments".

He added " In future we will also be able to combine light scattering technique with our pulse radiolysis system to follow kinetics of the nanogels synthesis to more deeply analyze mechanism of the reactions taking place during irradiation of aqueous solutions of polymers".

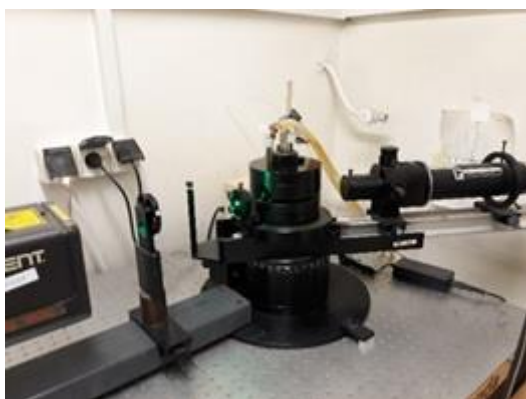
Drawing upon nearly 3 decades of experience -

Testa Analytical Solutions has developed a range of highly sensitive detectors (Viscometry, DRI, UV, MALLS, Flowmeter) that can be used as part of a triple detector GPC/SEC system to determine the size and conformation of all types of synthetic polymers, biopolymers, proteins, and peptides. The company is also able to offer polymer researchers - the BI-200SM light scattering goniometer - a precision research grade instrument designed for precise and accurate measurements. Based on a

special turntable with precision ball bearings and stepping motor, the BI-200SM's modular, automated design and quality construction guarantee precise measurements due to the wobble-free movement of the detector. As you would expect from a research grade system the BI-200SM can measure light scattering over a wide angular range (8° to 155° with 25 mm cells) and offers fine adjustment of measurement angles to 0.01° directly using a large, fine-control knob or PC-driven motor control.

For further information

on the GPC/SEC triple detection systems and the BI-200SM light scattering goniometer system please visit www.testa-analytical.com or contact Testa Analytical Solutions on +49-30-864-24076 / info@testa-analytical.com.



For further information on the Division

of Applied Radiation Chemistry in the Institute of Applied Radiation Chemistry at the Lodz University of Technology please visit mitr.p.lodz.pl/biomat

Testa Analytical Solutions e.K.

is a company dedicated to supplying the best possible instrumental solutions for characterization of polymers, particles, nanomaterials and proteins. Drawing upon over 30 years' experience of technologies serving these markets, the staff at Testa Analytical are happy to share their knowledge with researchers worldwide to help provide them with a working solution for even the most demanding applications.

Image Captions: **A:** Researchers from the Division of Applied Radiation Chemistry ; **B:** Set-up for static and dynamic light scattering measurement ; **C:** TESTA Analytical triple detection GPC/SEC system

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