

Abstract Submitted
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Liquid Chromatography at Critical Conditions: Balancing size exclusion and adsorption in nanopores ASEM ABDULAHAD, JEFFREY AMOS, CHANG RYU, Rensselaer Polytechnic Institute — Liquid chromatography at critical condition (LCCC) is a measure to identify thermodynamic conditions, in which polymers elute independently of molar mass during high performance liquid chromatography. Under these critical conditions the entropic exclusions that dominate size exclusion chromatography (SEC) and the enthalpic adsorption that governs adsorption-based interaction chromatography (IC) are said to negate one another resulting in simultaneous elution of the polymer of different molecular weights. Using multiple C18-bonded silica columns with different average nanopore sizes (from 5 nm to 30 nm), we will study the LCCC conditions of PS in methylene chloride/acetonitrile solvent mixture at different temperature. In addition, we will show that the separation of polystyrene can be fine tuned using a refined temperature gradient interaction chromatography (TGIC) that employs multiple columns of varying pore size in sequence.

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