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Field-Flow Fractionation and Mass Spectrometry: A Personal Retrospective

This lecture offers a reflective overview of my scientific odyssey in advancing Field-Flow Fractionation (FFF) and Mass Spectrometry (MS) for native-state analysis of biological macromolecules. Over the past three decades, my work on the gentle, open-channel principles of Flow FFF naturally extended into studies of biological particles such as lipoproteins and extracellular vesicles, which ultimately led me to a deeper engagement with mass spectrometry. Along this path, unexpected experimental challenges inspired new channel designs, including the frit-inlet asymmetrical system and a hollow-fiber disposable platform, as well as two-dimensional strategies combining isoelectric focusing with FFF. Coupling Flow FFF with MS, both off-line and in emerging miniaturized on-line formats, enabled size-resolved proteomic and lipidomic characterization relevant to neurodegeneration, cancer, and clinical biomarker discovery. This retrospective highlights not only the technical advances but also the curiosity, persistence, and meaningful turning points that shaped a lifelong pursuit of understanding complex biomolecular assemblies.

Date : 2025년 12월 12일 (금) 오후 5시
Location : 과학관 B131호
Host : 연세대학교 화학과