



The Gene and Linda Voiland School of Chemical Engineering and Bioengineering

2015 Seminar Series

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12:10 p.m. Wegner G1



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Prof. Leena Suntornsuk joined the Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Mahidol University in March 1998. In addition to her teaching, she conducts research on method development of capillary electrophoresis (CE) for pharmaceutical and natural product analyses. Her ultimate goal is to protect consumers and patients from sub-standard drugs and natural products using novel “green technology” to solve various problems in analytical chemistry. She has earned several national and international awards for her work including the Development Cooperation Prize (Belgium), the Nagai Award (Japan), and the Alexander von Humboldt Fellowship (Germany).

Experiencing capillary electrophoresis in pharmaceutical analysis

Capillary electrophoresis (CE) is a hybrid separation technique that combines unique features of various methods including the principle of gel electrophoresis, the fused silica capillary of gas chromatography (GC), and the highly sensitive detectors of high-performance liquid chromatography (HPLC). Separation in CE depends upon different migration of analytes, under an electric field, which occurs in a capillary filled with buffer. The small dimension of a capillary requires minimal amounts of samples and buffer and the automation of CE requires less time and labor. Additionally, the high separation efficiency (number of theoretical plate $> 10,000$), the on-column detection, and the various modes of CE make the technique attractive in separation science. During the past decades, CE has been developed from a simple to a more sophisticated method, because of numerous innovations (e.g. novel modes and detectors, on-line sample preparation, multiplexed and miniaturized systems, etc.) to enhance the flexibility, robustness, selectivity and sensitivity of the method. This growth has expanded CE applications to various challenging problems including drug analysis since pharmaceuticals are diverse in structures and physicochemical properties. Evidently, CE, in complimentary to other existing methods, will play significant roles in facilitating drug discovery, manufacturing, and development in many aspects (e.g., determinations of active ingredients, counter-ions and impurities, chiral separation, pharmacokinetic studies, stability studies, etc.). Selected applications of CE in these areas will be addressed in the seminar.