Xindu Geng et al., Mater Sci Nanotechnol 2018, Volume 2

ONLINE MULTIPLE-DIMENSIONAL LIQUID CHROMATOGRAPHY BY A SINGLE COLUMN

Xindu Geng[1], Minghui Geng[2] and **Yongjun Lu[2]**
[1]Northwest University, China
[2]Xi'an Aolan Science and Technology Development Company, China

Multiple-dimensional liquid chromatography (mD-LC) has been a power tool for substances in a complex sample, especially for fast separation of biopolymers in small scale in proteomics and drug purification in industrial scale. For an interface transfer between two columns, both offline and online manners can be adopted, the former can operate large sample, but very slowly; while the latter is very fast but only can transfer volume solution in μL scale with accounting of 1/10 to 1/100 of the fraction from the previous separation mode. A problem with the both is that it is hard simultaneously to satisfying with high sample size, high resolution, and high speed (three high). My presentation is to solve the request of the "three high" by employing the combination of steady-region/migration-region optimization of two variable theory of substance under gradient elution, a suitably sized chromatographic cake, and a fully automatic multiple liquid chromatograph. A key point is that the SR can be used as an operation space to expedite protein separation. Buffer exchange, collection of fractions, pre-concentration of target proteins, resampling, and so on, which are typically performed offline in hours or even days, but it can be carried out in minutes or even seconds in this operation space. A crude extract containing 20 % CBD was purified to purity of 99% by online 3D-LC (RP/RP/RP) with only a single column in less 90 min.

BIOGRAPHY

Xindu Geng has graduated from Northwest University (NWU, Xi'an) and became a Faculty Member of Department of Chemistry of NWU, and then a Faculty Member University of Minnesota in 1982-1983. He is the Visiting Professor of Purdue University separately at Department of Biochemistry in 1982-1984 and Department of Chemistry in 1995-1996, as well a Visiting Professor of Chemistry Department of Creighton University in 2001. He is the Director of Institute of Modern Separation Science of Northwest University. He has published more than 300 papers in reputed journals.

xdgeng@nwu.edu.cn

Note: