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Unknown polymer additive identification by multimode LC-MS/MS and multi-detectors

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Abstract

The identification of unknown none-volatile polymer additives is always a challenge because, unlike GC-MS, there is no commercial LC-MS library for spectrum matching. Therefore, unknown polymer additive identification is largely based on experience and standard matching. Multimode and multi-detector instruments like LC-MS/MS/DAD and GPC-MS/MS/DAD become very valuable tools in the identification of low level unknown polymer additives in different polymer matrix.

The multiple MS spectra from different ionization modes, positive and negative, plus different fragmentation energies will help to understand the acidity or basicity, and the stability of the unknown additive. The retention time of the LC or GPC, and the UV spectra will further help to narrow down the candidate list of the unknown additive.

We'll present the capability and the usage of a LC-MS/MS/DAD or a GPC-MS/MS/DAD instrument for unknown polymer additive identification in a single injection.

Biography

Wenjie Cao is a Staff Scientist of the Analytical Group at the SABIC Technology Center at Riyadh. He received his Ph.D. from Professor John Calvin Giddings' Group at the University of Utah. His Ph.D. research was on polymer separation and characterization by Thermal Field-Flow Fractionation. He was working for DuPont as a Research Investigator before joined SABIC in 2012. Dr. Cao is a contributor to the book of the Encyclopedia of Chromatography and has more than eighteen publications and presentations in peer-reviewed scientific journals and international conferences.