

Novel Method for Separation and Identification of N-Alkanes/Oligomers in HDPE by High Temperature High Performance Liquid Chromatography.

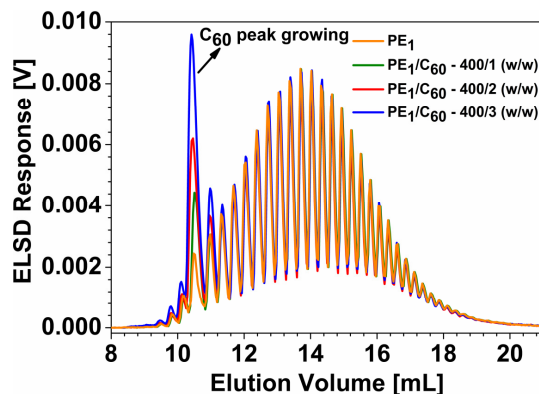
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n-Alkanes, often, are an important ingredient of waxes, oils, gasoline and a by-product in polyolefins. The separation and identification of n-alkanes are of concern for polyolefin producers as they may have some impact on both the processing and application. Accurate identification of these may be helpful to evaluate catalyst/process performance, as well as, in the identification of polyolefin applications such as food packaging. Traditional GC, LC and SEC-based methods may need certain extraction or pre-concentration steps, which tend to be time-consuming and prone to handling errors.

This study shows a novel method to separate and identify n-alkanes in HDPE using High Temperature, High Performance Liquid Chromatography (HT-HPLC) 1. Thus, n-alkanes in the range of C18-C160 can be separated using a graphite-based stationary phase (Hypercarb™) at specific chromatographic conditions. The separated alkanes are identified by doping with alkane standards and using MALDI-TOF as a reference technique. As a proof of concept, alkanes in an industrially-produced, high molar mass HDPE were analyzed. The key benefits of this approach are no prior extraction and excellent resolution.



Acknowledgement:

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References:

1. Mekap D, Macko T, Brüll R, Cong R, deGroot AW, Parrott A, Yau W *Macromolecules* **2013**, 46 (15), 6257 – 6262.