

# Improving resolution in high temperature gradient liquid chromatography of polyolefins.

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Polyolefins have gained tremendous importance in durable applications like pipes and storage containers. An essential quality criterion therefore is the resistance of the material towards slow crack growth and rapid crack propagation. On a molecular level these macroscopic properties are strongly influenced by both MMD and CCD.

High-Temperature High Performance Liquid Chromatography (HT-HPLC) has recently emerged as a new and fast technique to separate copolymers of ethylene and 1-olefins according to their comonomer content irrespective of their crystallinity [1, 2]. The separation is based on full adsorption and desorption of ethylene sequences on a graphite based stationary phase (Hypercarb™). The driving force can be based either on a gradient mobile phase or a temperature gradient using an isocratic mobile phase.

In this study, with the intention to improve the resolution of separation and to fine tune the selectivity in HT-HPLC, the influence of several experimental parameters (different binary mobile phases, length of column and slope of the gradient) was investigated. The overview of results will be given in this poster.

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## References:

1. Macko, T.; Pasch, H., *Macromolecules* 2009, 42, 6063.
2. Macko, T.; Ginzburg, A.; Remerie, K.; Brüll, R., *Macromol. Chem. Phys.* 2012, 213, 937.