

# **ANALYSIS OF ENR 50 GRAFTED WITH PMMA BY MEANS OF 2-D CHROMATOGRAPHY**

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## **ABSTRACT**

The characterisation of Epoxidised Natural Rubber (ENR 50) grafted with Polymethyl methacrylate (PMMA) by means of Liquid Chromatography (LC) is not as easy as it seems, because one cannot get separation of the polymer molecules by molar mass nor by means of chemical composition. In any chromatographic technique that is used for analysis of polymer molecules the effect of molar mass will have an influence on Chemical Composition Distribution (CCD) and in the same way chemical composition will have an influence on the Molar Mass Distribution (MMD). By using Liquid Chromatography under Critical Condition (LCCC) one can eliminate both the effect of molar mass and chemical composition, in this technique one analyses the polymer molecule by means of end group composition, so the polymer molecule is 'invisible' to molar mass. With the use of cross-fractionation the influence of molar mass and chemical composition on the various chromatographic techniques is minimised.

In the reaction where the ENR 50 is grafted with MMA a variety of products can be formed. These products can be the PMMA; ENR 50 grafted with PMMA or it can be the ENR 50 that has not been grafted. The ENR 50 in its emulsion form can also undergo chemical changes due to the initiator. By using LCCC as the first separation technique and SEC as the second separation technique the author tried to answer some of the questions that arise while doing this grafting reaction.