MELT CHROMATOGRAPHY BY NEW LINEAR VISCOELASTIC PRINCIPLE

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Melt chromatography is introduced by terminology of liquid chromatography, closer gel permeation chromatography (GPC), also referred as size-exclusion chromatography (SEC), to detect elution curve and molecular weight distribution (MWD). Another important feature, reached simultaneously from developed chromatogram, is the rheologically effective distribution (RED) related very accurately and linearly to the viscoelastic properties, which are important during processing polymers. Method is also accurate to detect long chain braches (LCB). Analysis starts from viscoelastic measurements done by oscillation rheometer and is based on new model for linear viscoelasticity of polymers. Model, presented earlier in by authors [1–4], is using control theory and melt calibration, which has the closest similarities with the widely used linear broad-standard calibration with SEC. Previously control theory was applied to model the relationship between the relaxation modulus, dynamic and shear viscosity, transient flow effects, power law and Cox-Merz rule related to MWD by melt calibration. Also temperature dependences and dimensions of statistical chain tube were modelled.

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