Title: **Simultaneous and fast determination of key design parameters of PP compounds by Crystex**

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Reference 8:
Reference 9:
Reference 10:
Reference 11:
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Abstract:
(Poster)

Depending on the final application, polypropylene based (PP-based) compounds typically consist of a high-impact heterophasic copolymer of propylene and ethylene with varying inorganic fillers, carbon black and optionally an impact modifier. The composition (like crystallinity and molecular weight) and amount of both the iPP matrix and ethylene propylene copolymer (EPC) need to be controlled carefully during the development of new products as well as in production.

The presence of fillers, pigments and other non-polyolefinic substances hinder accurate determinations of these crucial properties with typical, standard test methods. For example, the determination of C2 content by Fourier-transform infrared spectroscopy (FTIR) in filled materials is possible only after their removal, which is typically done by hot-filtration. For determination of the xylene cold solubles (XCS) and intrinsic viscosity (IV), an accurate polymer concentration is required, i.e. results obtained with standard methods are significantly influenced by the amount of fillers and pigments. While XCS gravimetric results could be corrected if the amount of non-polymer part is known, accurate IV measurement with the standard method is not possible at all.

The accuracy and efficiency of CRYSTEX technique for characterisation of base PP polymers, has been already demonstrated[1]. Thus, the Crystex was checked for suitability to provide more accurate and repeatable results of these properties of PP based compounds.

Simple model blends based on propylene heterophasic copolymer were prepared, in which the carbon black content, the type and amount of filler and elastomer content were varied in a systematic way. The blends and neat copolymer were characterized beside Crystex in parallel with standard XCS gravimetric method (ISO 16152) and for C2 by infrared spectroscopy. IV of the neat copolymer was determined according to the ISO 1628-3.
All results of the blends were compared against neat, non-filled PP material results.