

Liquid Toner Characterization Using AC Voltage Fields with Variable Frequencies

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Abstract

The electric characteristics of toner particles, especially the charge-mass-ratio and the electrophoretic mobility, have a decisive influence on the quality and the time for the development of the printed image in the electrophotographic printing process.

A multitude of substances is used as carrier liquids, charge control agents and additives for the optimisation of the process. The characterisation of this configuration using a new dynamic method is described in our paper. The measurement setup allows a repeated and "non-destructive" analysis of the toner. The resonance conditions can be determined by stimulation of the particles within the AC electrical field. A theoretic model was generated based on comparative inspections of mechanic spring-mass-systems. Different toners have been characterised according to their

q/m-value, the electrophoretic mobility and the influence of various additives. A correlation with results of known methods of measurement has been found. At the same time, this method allows the calculation of the influences of different fractions of toner particles (q/d-spectrum) and thus quality inspections of toner compositions.

Biography

Lutz Engisch received his Diplom-Chemiker in Physical Chemistry at the University of Technology Chemnitz in 1998. From 1998 to 2003 he worked for his PhD Degree at the Institute of Chemistry. Since 2003 he has been working in the Digital Printing group of the Institute for Print- and Media Technology. His work is primarily focussed on ferroelectrical printing with liquid toners and their characterisation.