

Studies on Inkjet Ink with Confocal Raman Microscopy

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Abstract

The chemical properties of ink, substrate and the interface between them influence the printing process and the achievable printing quality. Several methods to characterize these properties are developed and used in the recent years. The usage of vibration spectroscopy methods are opening a new way to characterize printouts on the molecular level. The raman spectroscopy, mainly working with visible light and a low level sample preparation, has a high potential in this field. Starting with chemical characterization of the composition up to using this method as an online observation tool in printing systems, a wide area of applications is thinkable.

This work presents the first results of using a confocal raman microscope to characterize oil and water based inkjet inks on different substrates. Using the proper measurement parameters, we were able to observe the spreading and penetration of the ink into the substrate. Further work shows the possibility of using the results for three dimensional ink distribution analyzing.

Author Biography

Lutz Engisch received his diploma and PhD in surface chemistry and spectroscopy at Chemnitz University of Technology. Since 2003, he has been working as a senior researcher for the Institute of Print and Media Technology in Chemnitz. At the institute, Engisch is in the department of digital printing and his work focuses on digital fabrication by inkjet printing.