

Reliable Jetting of Difficult Materials

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Abstract

Pigmented ink jet inks have become increasingly popular as the stability, reliability and performance of these materials has improved to an extent that they are enjoying widespread use in most desktop printers. The traditional method of achieving this level of reliability is to ensure the pigment particle size is as small and as uniform as possible to help eliminate settling and clogging of the nozzles.

In contrast, this paper discusses methods of reliably jetting pigments with particle sizes and densities in opposition to the current trends of decreasing pigment particle size. In particular, we discuss the use of specific tailored dispersion chemistries in combination with bespoke ink supply systems in order to jet pigments with densities of up to 10 g/cm³ and mean particle sizes of 5 microns and beyond.

Results demonstrate that the traditional approach to dispersing pigments is no longer valid when dealing with these "difficult" materials and that settling is unavoidable

and so must be characterised and manipulated through the ink chemistry.

Biography

Dr. Bentley joined Xennia in January 1999 and is now senior scientist responsible for a number of multi-disciplinary projects. Dr. Bentley has been involved with all forms of ink jet technology through developing a wide range of products for a variety of "difficult" applications. He has been responsible for a number of break-through ink jet inventions and is the inventor of the current direct metal printing technology.

Before joining Xennia he completed a PhD at Sheffield University working on the synthesis and characterisation of liquid crystalline electroluminescent polymers for use in polarised display applications and graduated from Loughborough University of Technology in 1995 with a BSc Honours degree in Chemistry with Polymer Science Technology.