

Soft Matter challenges in inkjet printing

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In inkjet printing, individual droplets of ink are ejected (“jetted”) from a printhead onto a substrate. All these droplets together form the final image. The ability to independently control each droplet (=pixel) of each print sets inkjet printing apart from traditional printing (the printing press) which can only make identical copies. Additionally, digital inkjet does not need a metal ‘master plate’, enabling quicker and smaller (personalized) print runs.

However, such delicate and precise handling of small ink droplets also puts harsh requirements on the ink, presenting particular soft matter challenges. The colloidal stability of the pigment particles must be controlled at every stage: in bottles/storage, in the printhead, and on the substrate.

Moreover, water-based ink is full of latex particles that coalesce to form a film, whereas UV-curable ink is converted from a solution of monomers to a polymer. As a result, each phase in the inkjet printing process presents its own set of challenges. In this talk, we will guide you through the process of making a print with an inkjet printer, highlighting the soft matter challenges along the way.