



Contribution ID: 34

Type: **Poster Presentation**

## Chromatographic Effects in Inkjet Printing

*Tuesday, 31 May 2022 15:20 (1h 10m)*

We have studied the chromatographic separation of solvents and dyes after deposition of a dye solution on a paper substrate. Due to their larger molecular size, dyes typically exhibit a stronger interaction with the paper constituents. Consequently, the imbibition process of the dye is usually delayed compared to that of the solvent. This impacts the achievable resolution and color homogeneity in inkjet printing. We present experiments and a comprehensive numerical model to illustrate and quantify these effects. The model accounts for the solvent evaporation, heat transfer, multicomponent unsaturated flow, and dye adsorption, as well as the presence of permeable fibers in the paper substrate. We identify the key parameters that can be tuned to optimize the pattern fidelity of the printing process.

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### Country

Netherlands

### References

Langmuir 37, 11726–11736 (2021)  
<https://doi.org/10.1021/acs.langmuir.1c01624>

### Time Block Preference

Time Block B (14:00-17:00 CET)

### Participation

Online

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**Session Classification:** Poster

**Track Classification:** (MS16) Fluid Interactions with Thin Porous Media