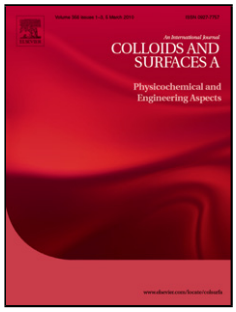

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Demixing and evaporation from a mechanically distributed water-in-oil thin film emulsion

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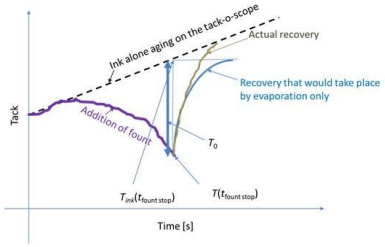
Graphical abstract



Highlights

- The role of emulsification on the evaporation from an aqueous water-in-oil emulsion
- Dynamics for different water-in-oil based systems
- Introduced correction factor for evaporation
- Model methodology to derive retained liquid amount after evaporation

Abstract

Evaporation of water from an alcohol/surfactant stabilised water-in-oil thin film emulsion, including transitioning from a state of excess water providing an oil-in-water precursor phase, has been studied using a printing ink application device. An ink rheology testing technique (TackOscope), incorporating the possibility to apply an aqueous liquid based on isopropyl alcohol and surfactant, termed fountain solution, to mix in an oil-based ink to create an emulsion in a twin roll nip, was used to provide