Title:	Evaporation of a Droplet: From physics to applications
Authors:	Choudhury, M.D. (/jspui/browse?type=author&value=Choudhury%2C+M.D.)
Keywords:	Drop Evaporation Crust Crack
Issue Date:	2019
Publisher:	Elsevier
Citation:	Physics Reports,804, pp.1-56.
Abstract:	Evaporation of a drop, though a simple everyday observation, provides a fascinating subject for study. Various issues interact here, such as dynamics of the contact line, evaporation-induced phase transitions, and formation of patterns. The explanation of the rich variety of patterns formed is not only an academic challenge, but also a problem of practical importance, as applications are growing in medical diagnosis and improvement of coating/printing technology. The multi-scale aspect of the problem is emphasized in this review. The specific fundamental problem to be solved, related to the system is the investigation of the mass transfer processes, the formation and evolution of phase fronts and the identification of mechanisms of pattern formation. To understand these problems, we introduce the important forces and interactions involved in these processes, and highlight the evaporation-driven phase transitions and flows in the drop. We focus on how the deposited patterns are related to and tuned by important factors, for instance substrate properties and contents of the drop. In addition, the formation of crust and crack patterns are discussed. The simulation and modeling methods, which are often utilized in this topic, are also reviewed. Finally, we summarize the applications of drop evaporation and suggest several potential directions for future research in this area. Exploiting the full potential of this topic in basic science research and applications needs involvement and interaction between scientists and engineers from disciplines of physics, chemistry, biology, medicine and other related fields.
Description:	Only IISERM authors are available in the record.
URI:	https://www.sciencedirect.com/science/article/pii/S0370157319300468 (https://www.sciencedirect.com/science/article/pii/S0370157319300468) http://hdl.handle.net/123456789/2094 (http://hdl.handle.net/123456789/2094)
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