

MULTISCALE MODELLING OF ADHESION AND WETTING

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ABSTRACT

Undesired ice and fouling accretion poses substantial challenges to the safety of all kinds of infrastructures as well as human activities.¹ In the cold region of the world, especially the Nordic area and many other European countries, anti-icing is crucial to the normal functioning of the society under low temperature environment and in cold seasons.² De-icing is an indispensable daily routine, for instance in transportation, for the sake of safety and the proper operations of countless applications. Realizing low to super-low ice adhesion strength on different surfaces is one of the major goals in anti-icing,³ which requires rationalization of ice adhesion and its correlation with surface wettability from the nanoscale origins to the continuum level application. To achieve sufficiently low ice adhesion, and ultimately the most plausible automatic ice removal by natural forces like gravity and wind power,³ multidisciplinary knowledge of surface wettability and multiscale methodologies need to be employed and combined.

It is highly beneficial to put-together research insights and strength from different fields in a themed symposium for ice adhesion mechanics, which will not only enable effective sharing of knowledge and interests but also trigger innovative approaches for tackling the history-long icing problem. This minisymposium will specifically devote to ice and fouling adhesion mechanics and surface wettability from a multiscale perspective. Renowned scientists with expertise in atomistic simulations, continuum mechanics and multiscale modelling will be invited to present their results and the corresponding research approaches towards low ice adhesion and tailored wettability on different surfaces. A round-table Q&A session will be organized in the end of the symposium, serving as conclusion remarks for the participants. Briefly, the minisymposium plans to have 2 sessions, with 1 keynote talk, 8 regular presentations, and a 40min Q&A session between experts and the audiences.

REFERENCES

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