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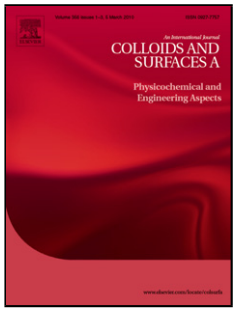

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Corrosion influence on the evaporation of sessile droplet

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Abstract

The influence of the corrosion on the evaporation of sessile droplet of sodium chloride solution was quantitatively investigated at a relative humidity of 0%. On planar surface, sessile saline droplets evaporated in the pinned, constant contact area mode. The time of evaporation of a sessile saline droplet is much longer on iron susbtrate than on silicon. This is due to the initiation of corrosion phenomenon. At low and intermediate salt concentrations, the inverse of the classical Evans model is observed due to the evaporation time wich is fast and the hydrodynamic flows linked to evaporation. Increasing salt concentration leads to the same evaporation rate for iron and silicon. This study shows that the conditions of evaporation will influence both the evaporation itself and the corrosion phenomenon.