

## CHF enhancement in a saturated pool boiling by porous layer formed on heat transfer surface using electrodeposition method

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The heat transfer surface was modified by forming a porous structure using electrodeposition method. In this presentation, the effect of deposition time and deposition current on boiling characteristic of porous surface experimentally investigated. Fig. 1 shows SEM images of modified heated surface. It is clear that the morphology of porous surfaces varies with the deposition time. Figs. 2 and 3 show the CHF as a function of deposition time and wicked volume flux, respectively. The CHF increases with deposition time in all cases. The CHF was enhanced up to 3 times compared to the plain surface by the uniform porous coating. As reported before [1], the linear relationship was confirmed between CHF and the wicked volume flux.

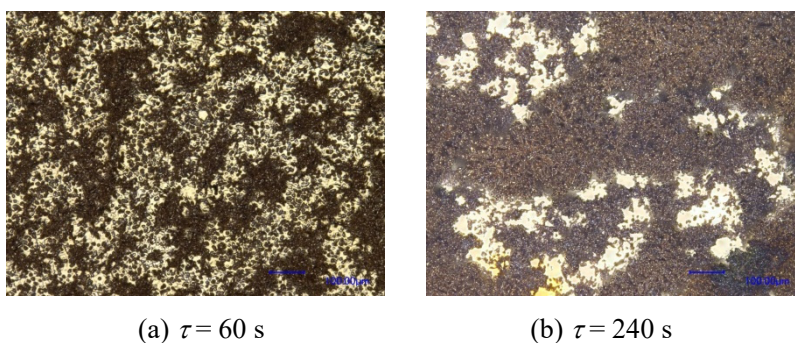


Fig. 1 Typical SEM images of test surface

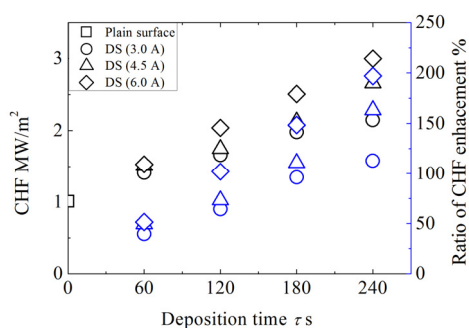


Fig. 2 CHF as a function of deposition time

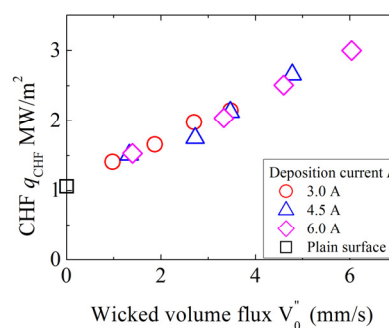


Fig. 3 CHF as a function of wicked volume flux

[1] M.M. Rahman, E. Olceroglu, M. McCarthy, Role of wickability on the critical heat flux of structured superhydrophilic surfaces, *Langmuir: the ACS journal of surfaces and colloids*, 30(37) (2014) 11225-11234.