

Abstract Submitted  
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**Bubble Dynamics on Nanostructured Microwires**<sup>1</sup> LAUREN COERTZE, DANIEL OREJON MANTECON, MARILIZE EVERTS, PRASHANT VALLURI, JOSUA MEYER, KHELLIL SEFIANE — Boiling on microwires is investigated aiming to provide a better understanding of the bubble dynamics and heat transfer as these are of great importance to many industrial and everyday processes. It is proposed that nanoparticle surface coatings may be a simple and scalable method of modifying the surface wettability and structure with the associated differences in bubble-surface interactions and the consequent variations in bubble dynamics, critical heat flux (CHF) and heat transfer coefficient. This work aims to develop an improved understanding of bubble dynamics such as bubble velocity, growth rate, bubble density distribution and detachment frequency on coated microwires at various heat fluxes. Experimental investigations will consider nanoparticle coated and bare platinum microwires with diameters of 100 and 250 micrometres, in pool boiling with water as working fluid. High speed, high resolution videography will be used to observe bubbles from nucleation to departure. The analysis will focus on the bubble dynamics occurring on nanoparticle coated and bare microwires. Bubble dynamics and CHF for the coated surfaces are expected to change compared to the bare wire depending on the nature of the surface coating applied.

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