

## **Non-Iterative Condensation Model for Steam Condensation with Noncondensable Gas in a Vertical Tube**

Hyun Sik PARK and Hee Cheon NO

Korea Advanced Institute of Science and Technology  
Department of Nuclear Engineering  
371-1 Ku-song Dong, Yu-song Gu, Taejon 305-701, Korea  
e-mail:hcno@nesun1.kaist.ac.kr

### **Abstract**

A non-iterative condensation model is proposed for easy engineering application using the iterative condensation model and the assumption of the same profile of the steam mass fraction as that of the gas temperature in the gas film boundary layer. It turns out that the Nusselt number for condensation heat transfer is expressed in terms of the Stanton number for mass transfer, gas mixture Reynolds number, air mass fraction, Jakob number, gas Prandtl number and liquid film Nusselt number. The comparison shows that the non-iterative model reasonably well predict the experimental data.