Overview of critical heat flux prediction method

Prof. Shan Jianqiang  
Xi'an Jiaotong University

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<th>Date</th>
<th>8 January, 2019 (Tuesday)</th>
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<td>Time</td>
<td>3:00pm – 4:00pm</td>
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<td>Venue</td>
<td>B6605, Yeung Kin Man Academic Building</td>
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Abstract

The critical heat flux (CHF) normally limits the amount of heat transferred, both in nuclear fuel bundles and in steam generators. Failure of the heated surface may occur once the CHF is exceeded. The number of empirical CHF correlations has increased over the past 50 years and has reached well over 1000, just for tubes cooled by water. The present proliferation of CHF prediction methods clearly indicates that the CHF mechanism is complex; no single theory or equation can be applied to all CHF conditions of interest. The complexity involved in predicting the CHF increases significantly when additional factors such as transients, non-uniform flux distributions, and asymmetric cross sections are introduced. This has led to the development of the CHF look-up table.

The presentation will cover CHF lookup table’s derivation and its limiting, mechanism model of DNB and dryout, PWR bundle CHF prediction.

About the Speaker

Prof. Shan Jianqiang got his Ph.D degree from Xi'an Jiaotong University in 1999 in the field of nuclear science and engineering. He is now a professor at the School of
Nuclear Science and Technology of Xi'an Jiaotong University. He is also the chairman of Shaanxi Nuclear Society, TPC member of international conference in the field of nuclear engineering, such as NURETH, ICON, ISSCWR.

He has been engaged in the teaching and research of nuclear reactor safety analysis and thermo-hydraulics for more than 20 years. He mainly majors in the fields of reactor core subchannel analysis model and numerical method, critical heat flux analysis, advanced nuclear system design and transient analysis method. He leaded or participated in about 100 projects funded by MOST, National Natural Science Foundation, international and related domestic enterprises. He has won Shaanxi Youth Science and Technology Award, National Defense Science and Technology Award and so on. He published more than 100 papers in journals and conferences and five monographs/textbooks.

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