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Numerical Prediction of Natural Circulation Heat Transfer for Supercritical Carbon Dioxide

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Due to their high specific heat, low viscosity, and good diffusivity, supercritical fluids have the potential to be ideal coolants. However, understanding the heat transfer for fluids under supercritical conditions has been a challenge. To understand the peculiar heat transfer characteristics, a wide range of experiments with different range of parameters and geometrical configurations has been conducted. The generated experimental data can be used as a reference to expand and assess the prediction accuracy of computational fluid dynamics models under supercritical conditions. Out of these models, RANS is the most widely used and consumes less computational power relative to other models. In this paper, natural circulation heat transfer of supercritical carbon dioxide will be investigated using RANS approach. To validate the prediction accuracy of RANS model, an extensive comparative study with experimental data will be presented in a full length article.

Speaker Bio

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