

**NON-GRAY COMBINED CONDUCTION AND RADIATION HEAT TRANSFER BY
USING FVM AND SLW**

Yujia Sun, Xiaobing Zhang* and John R. Howell****

*Nanjing University of Science and Technology
Nanjing, Jiangsu 210094China

**The University of Texas at Austin
Austin, Texas, 78712USA

ABSTRACT. To investigate 2D non-gray combined conduction and radiation problems, this paper uses the FVM to solve the energy equation and radiative transfer equation and the SLW method to model the gas spectral properties. Carbon dioxide, water vapor and carbon monoxide are considered as the participating media. The effects of gas species, gas mixture ratios and wall emissivities on the temperature and heat flux were investigated. The accuracy of the gray gas model was also analyzed compared to the SLW method.