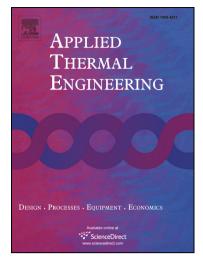
Accepted Manuscript

Research Paper

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PII: DOI: Reference:	S1359-4311(17)31496-5 https://doi.org/10.1016/j.applthermaleng.2017.11.133 ATE 11503
To appear in:	Applied Thermal Engineering
Received Date:	4 March 2017
Revised Date:	15 November 2017
Accepted Date:	25 November 2017



Please cite this article as: W. Fuqiang, J. Huijian, W. Hao, C. Ziming, T. Jianyu, Y. Yuan, S. Yuhang, Z. Wenjie, Radiative, conductive and laminar convective coupled heat transfer analysis of molten salts based on finite element method, *Applied Thermal Engineering* (2017), doi: https://doi.org/10.1016/j.applthermaleng.2017.11.133

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ACCEPTED MANUSCRIPT

Radiative, conductive and laminar convective coupled heat transfer analysis of molten salts based on finite element

method

Wang Fuqiang¹, Jin Huijian¹, Wang Hao¹, Cheng Ziming¹, Tan Jianyu¹*, Yuan Yuan²

Shang Yuhang¹, Zhang Wenjie³

 Harbin Institute of Technology at Weihai, Harbin Institute of Technology, 2, West Wenhua Road, Weihai 264209, P. R. China

 School of Energy Science and Engineering, Harbin Institute of Technology, 92, West Dazhi Street, Harbin 150001, P. R. China

 School of Transportation and Vehicle Engineering, Shandong University of Technology, 266 Xincun West Road, Zibo 255000, P. R. China

Abstract:

Radiative transfer is the dominant mode of heat transfer at high temperature for an absorbing-scattering media. Due to the complex solving of radiative transfer equation, radiative transfer is usually omitted in conventional heat transfer analysis of molten salt. In this study, the radiative, conductive and laminar convective coupled heat transfer of molten salts was numerically analyzed by the codes compiled based on finite element method (FEM) coupled with commercial Fluent software. The effects of radiative transfer on temperature distribution of molten salts were analyzed. Besides, the effects of scattering albedo, refractive index and fluid inlet velocity on temperature distribution of molten salts were also investigated. The numerical results indicated that the maximum elevated temperature deviation can reach up to 47.4%

Corresponding author. Tel.: +86 631 5687 210;

E-mail: Tanjianyu@hitwh.edu.cn (J.Y. Tan)

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