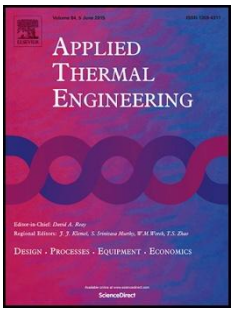
Accepted Manuscript



Title: The effect of radiative heat transfer characteristics on vacuum directional solidification process of multicrystalline silicon in the vertical bridgman system

Author: Xi Yang, Guoqiang Lv, Wenhui Ma, Haiyang Xue, Daotong Chen

PII: S1359-4311(15)01120-5
DOI: http://dx.doi.org/doi:10.1016/j.applthermaleng.2015.10.073
Reference: ATE 7190

To appear in: *Applied Thermal Engineering*

Received date: 12-8-2015
Accepted date: 15-10-2015

Please cite this article as: Xi Yang, Guoqiang Lv, Wenhui Ma, Haiyang Xue, Daotong Chen, The effect of radiative heat transfer characteristics on vacuum directional solidification process of multicrystalline silicon in the vertical bridgman system, *Applied Thermal Engineering* (2015), http://dx.doi.org/doi:10.1016/j.applthermaleng.2015.10.073.

The effect of radiative heat transfer characteristics on vacuum directional solidification process of multicrystalline silicon in the vertical Bridgman system

Xi Yang [a,b,c], Guoqiang Lv [b,c*], Wenhui Ma [a,b,c*], Haiyang Xue [b,c], Daotong Chen [b,c]

(*a. State Key Laboratory of Complex Nonferrous Metal Resources Cleaning Utilization in Yunnan Province/The National Engineering Laboratory for Vacuum Metallurgy, Kunming University of Science and Technology, Kunming 650093, China;*

b. Faculty of Metallurgical and Energy Engineering, Kunming University of Science and Technology, Kunming 650093, China;

c. Key Laboratory of Non-Ferrous Metals Vacuum Metallurgy of Yunnan Province/ Engineering Research Center for Silicon Metallurgy and Silicon Materials of Yunnan Provincial Universities, Kunming 650093, China;)

[*]Corresponding author. Tel.: +86 871 65161583; fax: +86 871 65107208.

E-mail address: lvguoqiang_ok@aliyun.com (G. Lv).mwhsilicon@163.com (W. Ma).

Highlights

·A simplified radiation view factor formula is derived for vertical Bridgman system.

·More detailed analysis of the heat transfer process in a vertical Bridgman system.

·The transient simulation results visualized reflect the effect of heat transfer.

·The optimization of process parameters and furnace design is proposed.

·Meet the demands of high-quality crystal production and save energy.