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Phosphorus removal from upgraded metallurgical-grade silicon by vacuum directional solidification

Cong Zhang, Kuixian Wei, Damin Zheng, Wenhui Ma, Yongnian Dai



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1 Phosphorus removal from upgraded metallurgical-grade silicon by
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3 Cong ZHANG^a, Kuixian WEI^{a*}, Damin ZHENG^a, Wenhui MA^{b*}, Yongnian
4 DAI^{a,b}

5 *(a. The National Engineering Laboratory for Vacuum Metallurgy and State/ Key Laboratory of*
6 *Complex Nonferrous Metal Resources Clean Utilization, Kunming University of Science and*
7 *Technology, Kunming 650093, P. R. China;*

8 *b. Key Laboratory for Nonferrous Vacuum Metallurgy of Yunnan Province and Engineering*
9 *Research Center for Silicon Metallurgy and Silicon Materials of Yunnan Provincial Universities,*
10 *Kunming University of Science and Technology, Kunming 650093, P. R. China)*

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

12 E-mail address: 94049220@qq.com (C. Zhang), kxwei2008@hotmail.com (K. Wei),

13 mwhsilicon@163.com (W. Ma).

14 **Abstract:**

15 The removal of phosphorus impurities is among the most important problems in
16 the purification of upgraded metallurgical-grade silicon (UMG-Si) used in the
17 preparation of solar-grade silicon (SOG-Si). Vacuum refining is considered relatively
18 effective for removing phosphorus from molten silicon. Based on the saturated vapor
19 pressure of phosphorus calculated, the removal of phosphorus from UMG-Si at 1823K
20 was performed via an industrial-scale vacuum directional solidification (VDS) furnace
21 in this paper. A mathematical model for phosphorus removal during VDS was proposed

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