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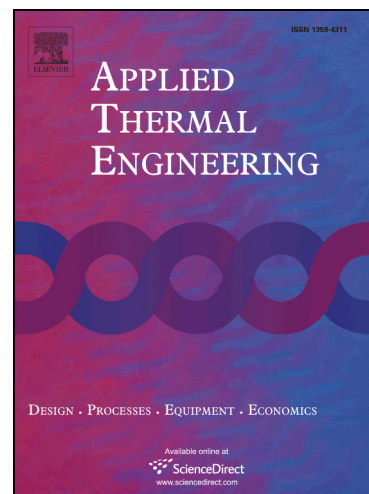
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**Single-step directional solidification technology for solar grade polysilicon  
preparation**

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**Abstract**

We propose a modified process for the massive production of polysilicon by directional solidification (DS) technology designed to change the currently used "two-step DS process" into a "single-step DS process", to enable the efficient production of polysilicon with lower energy and material consumption. The temperature distribution, solid-liquid (s/l) interface shapes, and thermal stresses during the DS process using the conventional process and the modified processes were studied by three-dimensional transient simulations. The simulation results about temperature, s/l interface, and thermal stresses were validated indirectly by

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