

Polycrystalline silicon production from monosilane by gas-jet plasma-chemical method. Modeling and experiment

V. O. Konstantinov, V. G. Shchukin, and R. G. Sharafutdinov

Kutateladze Institute of Thermophysics of the Siberian Branch of the Russian Academy of Sciences
1 Lavrentieva Ave., Novosibirsk, 630090, Russia

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A method for the plasma-chemical production of polycrystalline silicon is proposed. The method is based on the decomposition of monosilane fed into the process in the form of a supersonic jet and activated by an electron beam. A gas-dynamic simulation of the distribution of silicon losses during the deposition process has been carried out. The decomposition coefficient of monosilane was determined using mass spectrometric measurements. Also, the silicon adhesion coefficient to the surface and the monosilane usage coefficient were determined using gas-dynamic modeling and weight measurements.

Keywords: polycrystalline silicon, monosilane, electron beam plasma, gas dynamic modeling, mass spectrometry.

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