

Diffusion of Mo/W in silicon at high temperature

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As one of the renewable energy, polycrystalline solar cell is the alternative plan to solve the energy problem. There is heating process to grow crystal of silicon in the process which makes ingot. However, increasing temperature of silicon core rod wasted much electric power. So we performed an experiment to substitute some kind of metal for silicon. In this work, tungsten and molybdenum were selected as a substitute for silicon because of a high melting point as well as a low thermal-expansion coefficient of them. Tungsten and molybdenum films were deposited on silicon substrate by sputtering under the low pressure at 100°C. And then the prepared samples were annealed at various temperatures between 600 to 1000°C. X-ray diffractometer(XRD), scanning electron microscopy(SEM), transmission electron microscopy(TEM) and auger electron spectroscopy (AES) were employed to study the microstructure and the morphology.