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# BOOK OF ABSTRACTS

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# Study on the Early stage of Thin Film Growth in Pulsed Beam Deposition by Kinetic Monte Carlo Simulation

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Pulse beam deposition, such as pulse laser deposition (PLD), pulse magnetron sputtering deposition, plasma source ion implantation deposition, and pulse filtered plasma deposition, is an important kind of thin film growth methods and has been applied in the thin film growth with high quality. In this study a pulse beam deposition model based on square lattice was proposed and was used to simulate the process of thin film growth with kinetic Monte Carlo method. The influence of frequency and duration of pulse on the nucleation, aggregation, and morphology of thin film growth in early stage was investigated and discussed. The scaling distribution of growth island at various coverage, the change of growth island density with coverage, and morphology of growth island were presented. We also revealed the role of adatom diffusion in the pulse beam deposition. The simulation results were compared with that obtained with steady beam deposition. The atomistic mechanism of thin film growth in pulse beam deposition was discussed in the paper.

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