

Scheduling for Photolithography Process in Semiconductor Manufacturing

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Abstract

This research deals with a scheduling problem of maximizing throughput at the photolithography workstation of wafer fabrication where each job lot is treated in reentrant process as many times as the number of circuit layers, consequently creating scheduling competition for associated machines. Each of the machines requires a deliberate set-up for processing a different circuit layer. Due to technological restriction, some layers should have their reentrant processing at same machine which they started with for their respective first operation. For the problem, a dispatching rule is proposed in an attempt to maximize throughput by reducing the number of set-ups. The proposed rule is tested for its performance effectiveness and compared with some reference works in the literature by simulation experiments. The simulation tests show a considerable improvement in throughput over any other work, and characterize that the longer the set-up time, the higher the throughput improvement