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著者(和文)	AWAD Ahmed
Author(English)	Ahmed Awad
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Robust Lithographic Mask Generation for Advanced Technology Nodes

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Recent Optical Proximity Corrections (OPC) algorithms entail high level of aggressiveness to preserve acceptable pattern fidelity for advanced technology nodes printing. However, this results in lithographic mask manufacturability degradation as well as long OPC computation time. In this research, a novel OPC methodology is proposed to generate a highly manufacturable mask solution for a target circuitry with acceptable pattern fidelity and high robustness against process variations within a short computation time. A novel intensity estimation is proposed to estimate the wafer image of a mask within a short time. This estimation guides heuristically based OPC steps to improve pattern fidelity under process variations. Post-OPC adjustments are applied to improve manufacturability following intensity error prediction modeling without significant pattern fidelity degradation.