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(57) Abstract :
The present invention relates to intelligent fabrication methods for polymer/chalcogenide composite optical limiting films, integrating machine learning techniques to optimize their design and performance. The method involves collecting and preprocessing data on material properties and processing conditions, employing machine learning algorithms to predict optimal compositions and fabrication parameters, synthesizing the composite films based on these predictions, and evaluating their optical limiting performance. The invention further includes a system for intelligent fabrication comprising modules for data collection, machine learning analysis, fabrication, and performance evaluation. This approach significantly enhances the efficiency and effectiveness of producing high1performance optical limiting films, offering robust protection for optical devices against high-intensity light sources.

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