

應用遺傳演算法進行砷化鎵半導體後端製程排程之研究

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摘 要

本研究是探討砷化鎵半導體三階段單機流程型工廠之後端製程的生產排程問題；主要是以啓發式求解中最常用的遺傳演算法來進行砷化鎵半導體後端製程的生產排程應用，以工廠實際進行目前後端製程的三個工作站之最佳排程計劃，建構一個最佳化模式，以求得單目標總完工時間（maximum completion time, C_{max} ）最小為績效標準，並與目前工廠內所用的先到先服務（first-come-first-serve, FCFS）及加工時間最短優先派工法則（shortest processing time, SPT）等傳統派工進行比較，希望能藉此實際運用及改善工廠後端製程之生產排程作業；經證實發現遺傳演算法的求解效率及效果確實優於目前的派工法則，藉此可以幫助管理者進行改善實際排程作業之參考。

關鍵詞：排程，遺傳演算法，總完工時間，流程型工廠

Application of Genetic Algorithms (GAs) to the Backside Processing of Semiconductors for Scheduling Research

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ABSTRACT

In this research concerning the problem of scheduling a three-step single-flowshop machine, the Genetic Algorithm (GA) method, the most widely used heuristic approach, is applied to improve timetables for the backside processing of semiconductors. Related data on backside processing in my own factory is offered; then, a scheduling rule for research is set. The aim is to minimize the Makespan and demonstrate that the GA method is superior to a first-come-first-serve system. The results of this study can help ameliorate scheduling problems and enhance total performance. The ultimate goal is expected to be a continuous increase in the competitive advantage of a business.

Key Words: scheduling, genetic algorithm (GA), makespan, flowshop