

# 應用可拓理論分析放電加工製程參數最佳化之研究

## Optimization of Manufacturing Process in EDM Parameter Using Extension Set Analysis

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### 摘 要

放電加工技術在現代模具加工業中已占舉足輕重的地位，於是放電加工製程最佳化就成為國內機械加工業之熱門研究主題。然其製程研究多半是屬於量變的探討，本文以田口直交表來設計製程參數，應用物元概念、關聯函數等可拓工程理論來作製程參數質變的探討。利用物元的可拓性、可拓工程理論及田口方法，在最少實驗次數下，處理具有多重品質特性之問題，設計出最佳放電加工製程參數，藉以延長電極壽命與被加工物精度，進而提高加工速度，增加產能。

關鍵字：放電加工、量變、質變、物元模型、關聯函數、可拓理論

### Abstract

The EDM play a decisive role in mold manufacturing industry recently. Therefore the optimization of manufacturing process in EDM is the popular in engineering, Based on the study are discussed in quantitative change. In this paper, we use the Taguchi's method to design the min experiment times of manufacturing process in EDM, and to probe into the qualitative change degree function of machining parameters, matter-elements and dependent function, of extension theory. In the other way using the extensive of matter-elements and touchy method to make the optimization of Machining parameter in min experiment times. In order to extend the life of electrode and workpiece precision, to improve the speed in manufacturing and increasing the output, and ability.

**Key words** : EDM, qualitative change degree function, Matter-Elements Model, Dependent Function, Extension Theory

### 一、前言

可拓學之創立，始於1983年蔡文提出之第一篇論文《可拓集合和不相容問題》。其理論基礎為物元理論和可拓集合論，其邏輯細胞則是物元，研究對象為現實世界中