

# 應用數位影像反射式光彈法於結構構件應力量測

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## 摘要

A digital image discrete processing photoelastic coatings system is developed to determine the magnitude of the residual stress in a prestressed concrete specimen subjected to an uniform uniaxial compression load and expansion stress analysis of ferroconcrete corrosion. Performing digital image processing fringe analysis, the optical data contained in the reflection photoelastic isochromatics are converted into values of residual stress. The evaluation is conducted through the measurement of the in-plane stress field generated by the introduction of the small hole. The stress field is determined from the calculation of the photostress distribution by means of digital discrete image processing method. The magnitude of the residual stress field is finally evaluated through a discrete tricolor (R.G.B.) grey level calculation and compared with the prestress value applied to the concrete specimen.

**關鍵字：**Reflection Photoelasticity, Digital discrete image processing, Stress Measurement