

# 微表面形貌之黏附力最小化之加工方法及其微結構

發明人:洪政豪、許歲舜、鄭翔戎、洪雅馨

## 技術內容

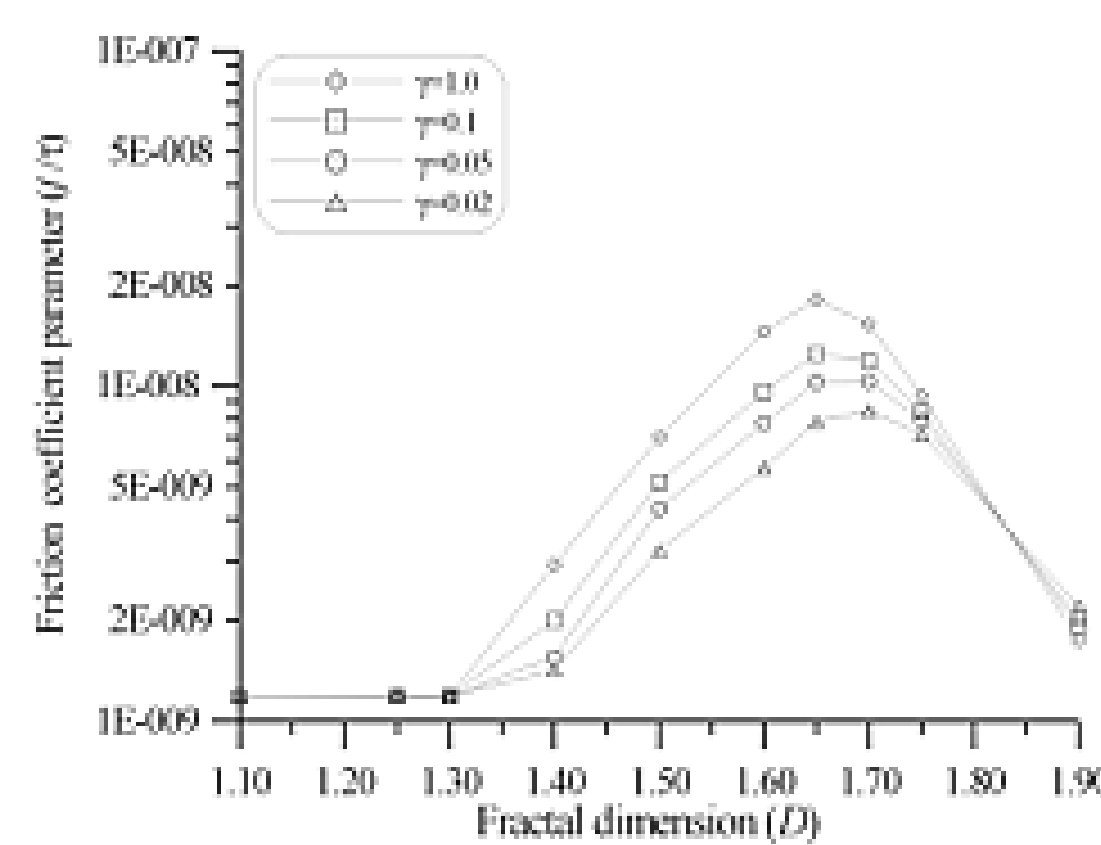
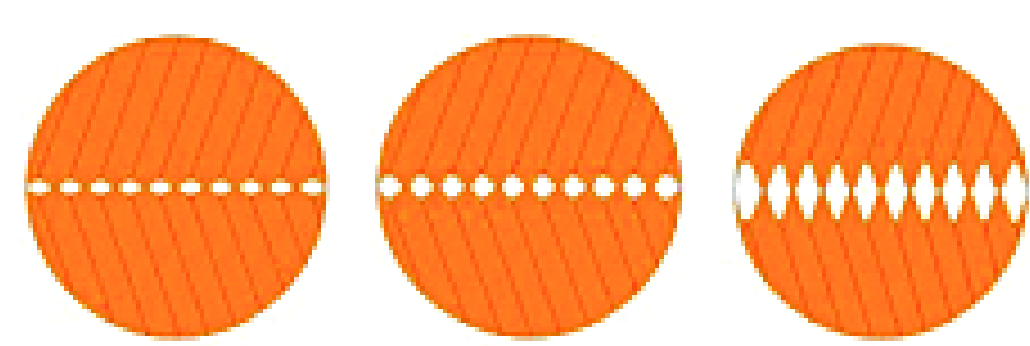
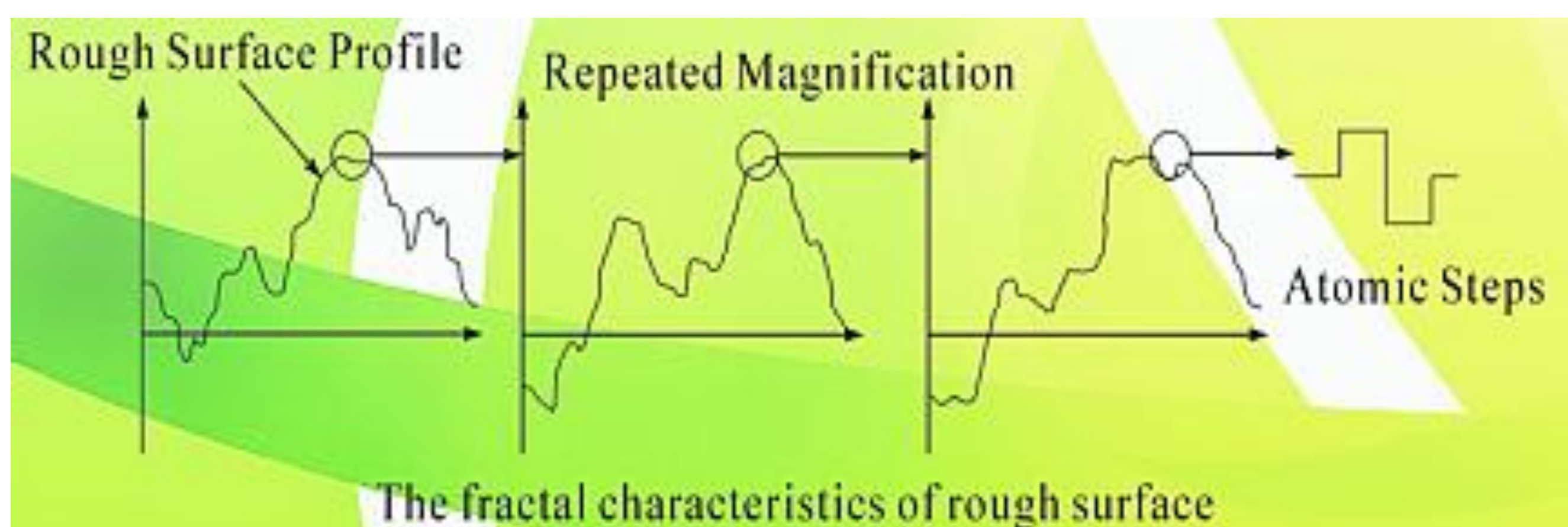
對於運動元件之表面設計而言，面臨一個兩難的困境：

- [a] 若兩者間之接觸面太粗糙，其表面凹凸之棘輪及變形效應提高摩擦力，有礙微元件之運轉或滑動。
- [b] 若兩者間之接觸面太光滑，其黏附力反而大，亦有礙於微元件之運轉或滑動。

本發明找出在一微元件之表面上具有複數壓痕以達到抗黏附性及抗摩擦性均佳之最佳效果，並找出一概括之表面形貌特徵，對於微機電業者而言，不論是微感測器、微驅動器、微機構、微滑軌等設計，均有極大的助益。

本研究能果能有效解決當前運動微元件面臨最嚴重之磨潤失效問題，不論在精密機械、半導體業、光電產業、生醫產業均有助益。

## 技術圖片



$$\mu = \alpha \Gamma \left[ \frac{DK\phi}{2a_1^{2-D}} \left[ \frac{2}{2-D} \left[ a_1^{(2-D)/2} - \frac{(1-\beta)}{\ln(a_1/a_2)} \left[ a_1^{(2-D)/2} \ln(a_1/a_2) \right] \right] - \frac{2}{2-D} \left[ a_1^{(2-D)/2} - a_2^{(2-D)/2} \right] \right] - \frac{D\gamma a_1^{D/2}}{\pi G^{(1-D)/2}} \left( \ln a_1 / a_1 \right) + \frac{k_1^* D a_1^{D/2}}{(a_1^* - a_2^*)^2} \left[ \left( a_1^* / D \right) \left[ a_1^{*-D/2} - a_2^{*-D/2} \right] + \frac{3a_1^{*2}}{2-D} \left( a_1^{(2-D)/2} - a_2^{(2-D)/2} \right) - \frac{3a_1^*}{4-D} \left( a_1^{(4-D)/2} - a_2^{(4-D)/2} \right) + \frac{1}{6-D} \left( a_1^{(6-D)/2} - a_2^{(6-D)/2} \right) \right] + \frac{k_2^* D a_1^{D/2}}{(a_1^* - a_2^*)^2} \left[ \frac{a_1^{*2}}{D} \left( a_1^{*-D/2} - a_2^{*-D/2} \right) + \frac{2a_1^*}{2-D} \times \left( a_1^{(2-D)/2} - a_2^{(2-D)/2} \right) - \frac{1}{4-D} \left( a_1^{(4-D)/2} - a_2^{(4-D)/2} \right) \right] + \frac{k_3^* D a_1^{D/2}}{(a_1^* - a_2^*)^2} \left[ \frac{a_1^*}{D} \left( a_1^{*-D/2} - a_2^{*-D/2} \right) + \left( a_1^{(2-D)/2} - a_2^{(2-D)/2} \right) \times \frac{1}{2-D} \right] + k_4^* \left[ a_1^{D/2} - a_2^{D/2} \right] \right]$$

