國立臺灣大學技術行銷表

台大案號: 06A-101110

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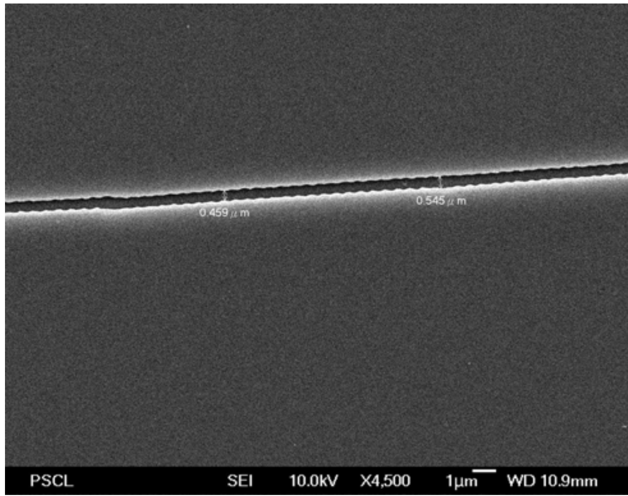
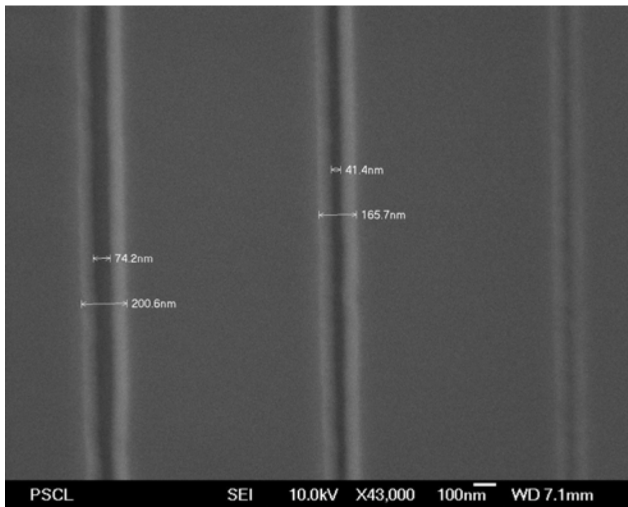
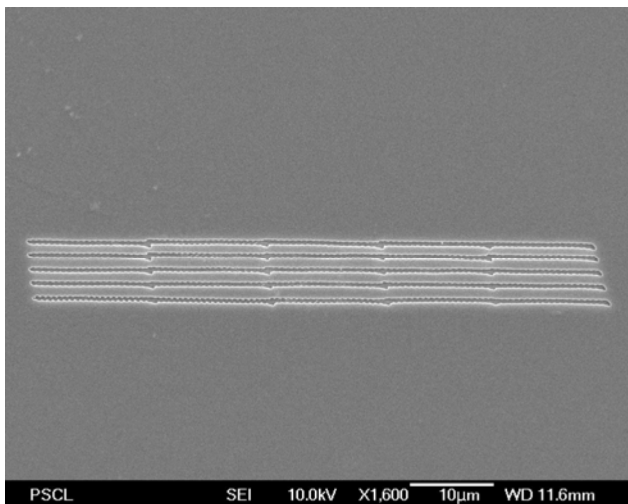
產品/技術名稱	以電子束微影進行高速大面積高解析度連續圖形的曝寫方法 Fast Large-area High-resolution Continuous Pattern Generation Apparatus in Electron-beam Lithography System
發明人/單位	顏家鈺/台灣大學機械系
產品/技術說明	本發明之內容係針對電子束微影系統中之電子束掃瞄系統及平台定位系統的特性，提出一個能快速曝寫出小線寬、大面積任意圖形之系統架構以及伺服控制方法。
應用範圍	1. 大面積、具週期性，並且有局部特殊之結構以產生特定光學性質之光學元件。 2. 具小關鍵尺寸之微型積體電路製作。
產品/技術優勢	一般單電子源之曝寫系統雖然能產生高線速度的掃瞄，因此曝寫品質很高，但其缺點是單次曝寫範圍小，因此在兩次曝寫間只能產生非連續性的圖形。此外，較大的單次曝光範圍也可能產生熱效應等不確定性。本發明提出以長行程高解析度的量測系統做為全域定位裝置，加上協調不同動態特性的致動平台，配合以電子束偏折快速曝寫出任意圖形，以步進-穩定-曝寫的流程達成大面積高解析度連續圖形的曝寫，並能大幅提高圖形解析度、提升生產力。
市場潛力	已有台積電公司準備技轉(詳附件)
產品/技術 智財權保護方式	專利申請中

<table>
<tr><td colspan="2">圖片
(已公開之成果可提供圖片)</td></tr>
<tr><td></td><td>30um/sec 之步進速度下，細線寬圖形接合之成果</td></tr>
<tr><td></td><td>結合適當之光阻條件，可曝寫出奈米等級之細線寬電子束微影圖形。</td></tr>
<tr><td></td><td>週期性圖形(如直線陣列)之接合。</td></tr>
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Marketing Abstract of NTU's Invention Disclosure

NTU's docket no:____________(由產學合作中心填寫)

CIAC contact： Tel： e-mail：

Title	**Fast Large-area High-resolution Continuous Pattern Generation Apparatus in Electron-beam Lithography System**
Inventor (s)	
Brief Description	This patent is to disclose pattern generation method for deriving electron-beam-generated large area arbitrary high resolution pattern.
Fields of Application	1. Large area periodic micro-optics with sophisticated local pattern for certain optical property generation. 2. To fabricate small critical dimension integrated circuits.
Advantages	Beam-scanned e-beam exposure systems can generate high quality patterns with high velocity of scanning. The disadvantage of beam-scanning exposure is that the area of single exposure is too small to derive a continuous pattern. In addition, larger single exposure area will introduce thermal effect and other uncertainties which are harmful to pattern accuracy. This invention proposed to employ long range, high resolution measurement system for global positioning and a well-coordinated actuator stage set which have different dynamical characteristics, and cooperated with rapid-deflecting electron beam for rapid arbitrary pattern generation. The stepping-stabilizing-exposing process can be used to accomplish large area and high resolution e-beam-exposed patterns with high throughput.
Market Potential	Technology transfer is ready to Taiwan Semiconductor Manufacturing Company.
IP Right(s)	

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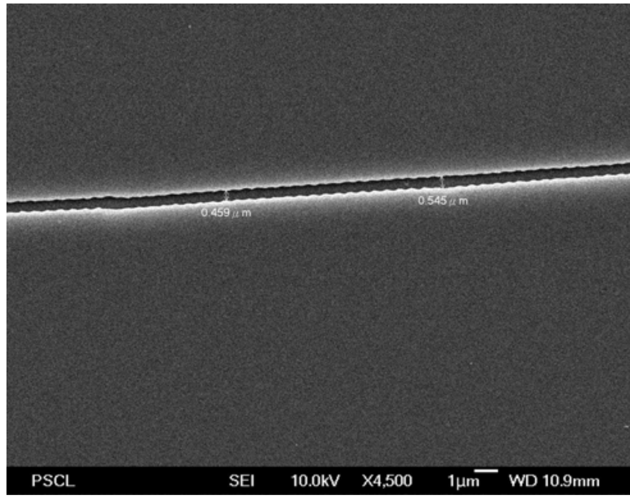
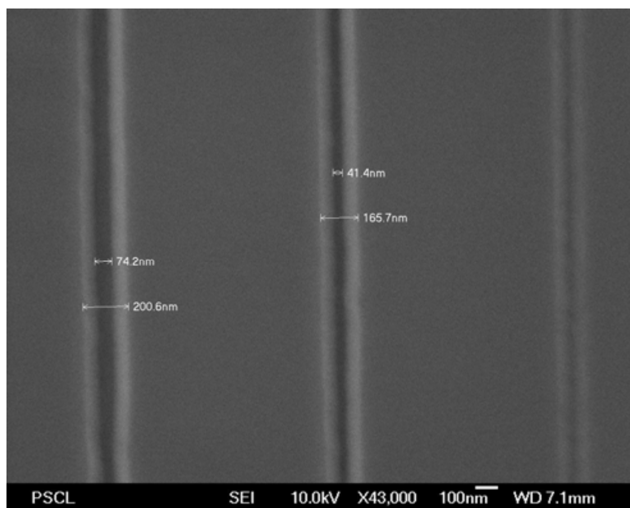
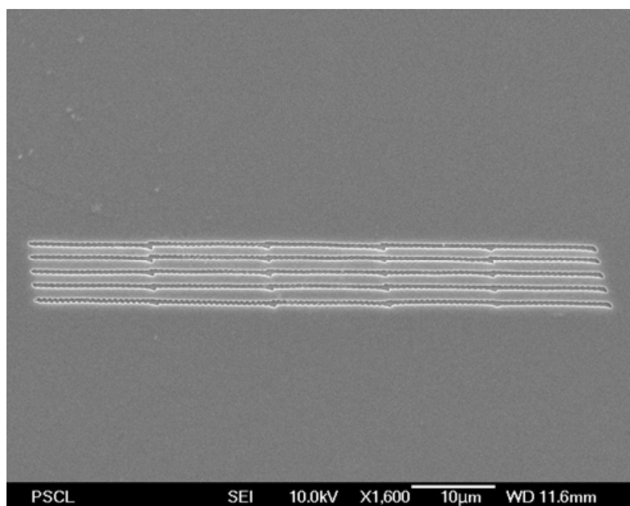
Picture	
	The stitching result at the step velocity of 30um/sec.
	Exposure thin line of nano grade is possible if combining a property photoresist condition.
	Stitching of periodic patterns is also feasible. The picture is exactly an example of straight line array stitching.