



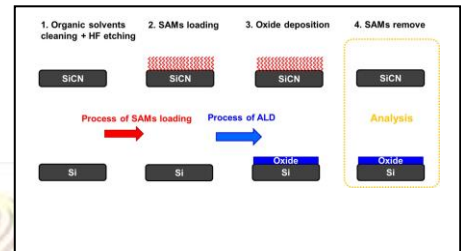
# 半導體裝置及其製造方法

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簡歷：

[http://www.mse.ntu.edu.tw/index.php?option=com\\_zoo&task=item&item\\_id=47&Itemid=902&lang=tw](http://www.mse.ntu.edu.tw/index.php?option=com_zoo&task=item&item_id=47&Itemid=902&lang=tw)



**市場及需求：**隨著半導體製程技術不斷的演進與微縮，在現今 5、3 奈米先進奈米技術節點中，晶圓製造過程的材料與結構日益複雜，使得奈米製程之成本及不確定性大幅增加。原子層沉積技術作為現代半導體製程不可或缺之薄膜沈積技術，若能於薄膜沉積過程中同時達成具「選擇性」之特性，可於製程中大幅減少奈米製程所需之步驟，使得成本與穩定性大幅改善。

**技術摘要(含成果)：**透過自組裝高分子選擇性吸附，可在不同性質之基板，如金屬與氧化物間，達成區域鈍化的效果，進而形成之選擇性原子層沉積，並應用於先進半導體元件結構中。

**優勢：**透過自組裝高分子選擇吸附之單分子層膜，即可達到良好的自我對齊與選擇性原子層沈積的效果。

**競爭產品：**沈積-蝕刻重複製程、ABC 形式之原子層沈積技術

**專利現況：**

無

**聯絡方式(請不用填)：**

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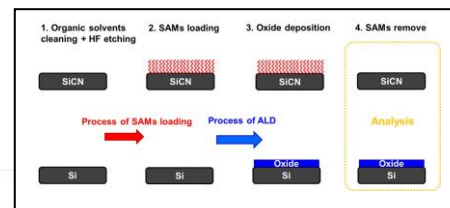


## SEMICONDUCTOR DEVICE AND MANUFACTURING METHOD THEREOF

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### Experience:

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**Market Needs:** With the continuous evolution and miniaturization of semiconductor manufacturing technology, materials and structures are increasingly complicated in the current 5 and 3 nm advanced semiconductor technology nodes, which significantly increases the cost and uncertainty of nanofabrication. Atomic layer deposition (ALD) is a critical thin film deposition technology in advanced semiconductor manufacturing processes. If ALD with "area selectivity" features can be achieved, the fabrication steps including photolithography and etching can be significantly reduced. Hence the process cost and stability can also be considerably improved.

**Our Technology:** Through the combination of ALD and self-assembled monolayers (SAMs) which lead to area selective adsorption, the area-selective ALD can be achieved in the regions between surfaces with different materials, such as metal and oxide, and so can be applied to the advanced semiconductor manufacturing.

**Strength:** An excellent self-limited and area-selective ALD technique can be achieved by self-assembled monolayers with the area selective adsorption.

**Competing Products:** Multiple deposition and etch steps, ABC-type ALD

**Intellectual Properties:** None

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