



同時具有表面電漿共振以及電漿波導共振之微結構晶片

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簡歷：(可列出相關連結，例如系所、研究室網頁)

研究室網站：<http://web.che.ntu.edu.tw/biomembrane/>

市場及需求：

近來對於利用表面電漿共振之延伸技術量測生物或物質吸附等現象的研究相當的多，而此技術晶片有潛力可以提供更多資訊，並提出新的應用示範，在不需改變現有的儀器配備下即可將表面電漿共振的可應用範圍增廣。

技術摘要(含成果)：

我們在本技術中提供概念：電漿波導/表面電漿共振混合模態平台，是可容納兩種電磁波共振模態同時存在，即表面電漿共振模態及電漿波導共振模態(Plasmon-waveguide Resonance)。在此蝕刻的結構中，孔洞底部鍍有裸露的薄膜共振層以作為表面電漿共振的介質，用以偵測孔洞內部空間之物質及介質累積變化；未被蝕刻的區塊由其特定厚度之波導層和底部共膜層形成電漿波導共振模態的存在介質，用以偵測波導層外溶液介質之改變。此平台可形成雙共振峰曲線並能各自反應外界變化。

優勢：

1. 提供雙共振峰之曲線，可同時量測不同反應區域的變化。
2. 不須改變現有商用儀器即可應用。
3. 廣泛應用的物理性偵測，可搭配現有化學性偵測形成混合平台。

競爭產品：

1. 傳統表面電漿共振晶片。然而其偵測峰只有一個且只有單一偵測區域。
2. 電漿波導共振晶片。然而其偵測峰只有一個且只有單一偵測區域。
3. 局部表面電漿共振晶片。然而其偵測峰只有一個且只有單一偵測區域。

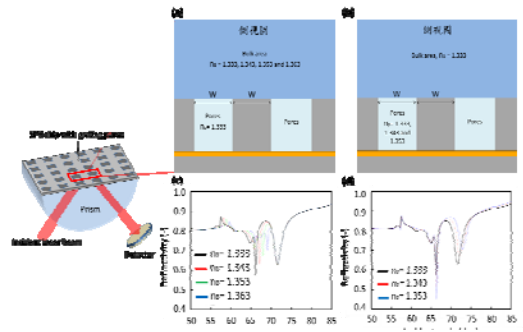
專利現況：

本研究團隊具有晶片生產技術、光學儀器架設能力、細胞培養及生物膜研究等生物實驗背景、微流道設計與操作技術以及電腦模擬能力，有足夠的表面電漿共振技術應用相關領域之材料。

聯絡方式(請不用填)：

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Grating Structured Surface Plasmon Resonance Chip and Plasmon Waveguide Resonance/Surface Plasmon Resonance Combined Chip

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Experience:

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Market Needs:

Recently, lots of researchers use surface plasmon resonance and its related technique to

study in the fields of biology and chemistry. The developed chip in this study provides more information than conventional chip did, and we demonstrate the new application for surface plasmon resonance. Newly developed chip can be applied directly in current commercial equipment without the change or adjustment in parts.

Our Technology:

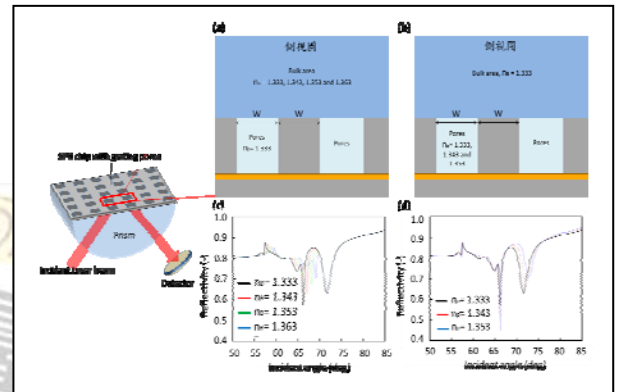
In this study, we created PWR/SPR combined chip that it can retain both surface plasmon resonance (SPR) and plasmon-waveguide resonance (PWR). This chip has sub-micron sized grating pore array structures. In the pores, resonance film is coated at the bottom and the change of refractive index in the pore region close to the surface of resonance film is sensed by the SPR. In the place without etching, PWR occurs in resonance film with waveguide layer. The geometry of the PWR/SPR combined chip allowed us to use the SPR to detect the refractive index change in the pore region, which is correlated to the target species concentration inside the pore, and the PWR to simultaneously monitor the change of refractive index at the top waveguide layer surface. This chip provides two resonance peaks that can react to change in different area, respectively.

Strength:

1. Provide two resonance peaks that react to changes happen in different area.
2. It can be used in current commercial machine without adjusting the parts.
3. Sense the physical properties so that it can be cooperated with current chemical detection platform.

Competing Products:

1. Conventional SPR chip. However, it has one peak and limited sensing area.
2. PWR chip. However, it has one peak and limited sensing area.
3. LSPR chip. However, it has one peak and limited sensing area.



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Intellectual Properties:

Our group have the techniques: chip fabrication and design, optical system design, cell culture and membrane study, operation and design of microfluidics system and simulation. These techniques are related application to support the further development of surface plasmon resonance.

Contact (do not need to fill out):

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