國立台灣大學技術行銷表

台大案號:_____(由產學組填寫)

產學合作中心聯絡人：　　電話：　　e-mail：

產品/技術名稱	高介電係數材料之金氧半架構週邊接光感測器
發明人/單位	胡振國，鄭任遠/國立台灣大學電機工程學系，電子工程學研究所
產品/技術說明	利用高介電係數材料在金氧半電容元件電極週邊半導體在光照射下，在大偏壓反轉區操作能使穿隧電流在邊緣高電場區收斂而產生大量電流變化的方法來設計超高靈敏度光偵測器與新穎 CMOS 影像感測器
應用範圍	1.穿隧式金氧半光二極體 2.光偵測器 3.CMOS 影像感測器
產品/技術優勢	高介電係數材料在半導體業界已廣泛用於45nm 以下的 CMOS 製程，本技術將高靈敏度的光二極體應用於光偵測器與 CMOS 影像偵測器，並可整合傳統 CMOS 製程
市場潛力	1. 簡易整合 CMOS 製程 2. 超高靈敏度光感測器 3. 超高靈敏度 CMOS 影像感測器
產品/技術 智財權保護方式	

Marketing Abstract of NTU's Invention Disclosure

NTU's docket no:_____(由技轉室填寫)

TTO contact：　　Tel：　　e-mail：

Title	MOS edge absorption sensor with high-k material
Inventor (s)	Jenn-Gwo Hwu, Jen-Yuan Cheng
Brief Description	(≤ 100 words of non-confidential information) By building HfO_2 based devices that with the direct observation of the enhanced edge charge collection efficiency due to fringe field distribution in inversion, we are able to demonstrate a photodetector with 3,000 times (ratio of photo current to dark current) improvement in sensitivity than the conventional SiO_2 based electron tunneling photodiodes (approximate 100 times) in the visible. This leads to a remarkable high sensitivity of photodiode in the future nanotechnology.
Fields of Application	1. MOS Tunneling Photodiode 2. Photodetector 3. CMOS Image Sensor
Advantages	(when compared to the existing technologies) 1. High-k material compatible in advanced CMOS technology (<45nm) 2. Aluminum gate replace the Indium-Tin-Oxide gate for the device degradation due to photo-stress.
Market Potential	1. CMOS Process Compatible 2. Ultra-Sensitive Photodetector 3. Ultra-Sensitive CMOS image Sensor
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