附件四、技術說明表

在具有垂直異向性之磁性元件中達成單向性零外加場自旋軌道矩翻轉之新式膜層設計

提案人： 白奇峰 教授
單　位： 國立臺灣大學　材料科學與工程學系/研究所
簡　歷：美國麻省理工學院博士後研究；工研院電光所特聘研究

市場及需求:

本技術的關鍵在於：藉由材料結構產生垂直平面之自旋極化效應達到單向零外加場自旋矩翻轉，將有利於垂直式自旋軌道矩記憶體之開發及應用，同時能達到簡化製程和降低成本的功效。對於有意開發新世代磁性記憶體之本土公司，將會有不小的吸引力。潛在廠商：台灣積體電路公司、台灣美光、台灣艾司摩爾公司、台灣應用材料公司…等。

技術摘要(含成果):

藉由材料結構產生垂直平面之自旋極化效應達到單向零外加場自旋矩翻轉。

優勢:

透過此種構想設計出來的新式膜層結構，可利用材料本身結構產生垂直平面之自旋極化效應達到單向零外加場自旋軌道矩翻轉，可提升垂直式自旋軌道記憶體的應用。

競爭產品:無

專利現況:

專利申請中

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A new layer design for achieving unidirectional field-free spin-orbit torque switching in magnetic device with perpendicular magnetic anisotropy

PI： Prof. Chi-Feng Pai
Department of Materials Science and Engineering, National Taiwan University

Experience: Postdoc Research Associate, Massachusetts Institute of Technology
Consulting Research Fellow, Industrial Technology Research Institute

Market Needs:

The key of this technology: Achieving unidirectional field-free spin-orbit torque switching by facet-induced out-of-plane spin polarization is advantageous to the development and applicability of spin-orbit torque magnetic random access memory with perpendicular magnetic anisotropy. It also simplify the fabrication process and lower the cost. It is attractive for the companies who are interested in developing the next-generation magnetic memory. Potential customers: TSMC, Micron Taiwan, ASML Taiwan, Applied Materials Taiwan, etc.

Our Technology:

Achieving unidirectional field-free spin-orbit torque switching by facet-induced out-of-plane spin polarization

Strength:

Through this new layer design, the applicability of perpendicular spin-orbit torque magnetic random access memory can be improved through the achievement of unidirectional field-free spin-orbit torque switching by facet-induced out-of-plane spin polarization

Competing Products:

None

Intellectual Properties:

Patent application is in progress

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