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臺灣大學應用力學研究所

演 講 公 告

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主 講 人：李敏鴻教授
國立臺灣大學重點科技學院

講　　題：Versatile Applications of Ferroelectric HfO2-Based Materials

摘　　要： 如附件

主 持 人： 陳建甫教授

時　　間： 113年11月04日（星期一）下午2時20分開始

地　　點： 臺灣大學應用力學研究所國際會議廳

☆☆ 歡 迎 聽 講 ，敬 請 張 貼 ☆☆

1. Personal Information

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Brief Biography

Min-Hung Lee received a Ph.D. degree in the Department of Electric Engineering (EE) at the National Taiwan University (NTU), Taiwan, in 2002. Currently, he is a Professor in the Program for Semiconductor Devices, Materials, and Hetero-integration (DMHI) at NTU. Prior to joining NTU, he was a Distinguished Professor at the National Taiwan Normal University (NTNU). He was a Research Visiting Scholar at UC Berkeley in 2019. He worked with Industrial Technology Research Institute (ITRI) in 2002-2007. His researches focus on devices of GaN-based, Ferroelectric-Memory and Logic, Neural-network, Oxide-Semiconductor, Flexible-Electronics, and Strained-Engineering. He has authored or co-authored more than 200 publications and holds 11 U.S. patents. Now, he is a senior member of IEEE.

2. Speech Information

Topic of Speech：

Versatile Applications of Ferroelectric HfO2-Based Materials

Abstract (about 100 to 200 words) :

HfO_2 with ferroelectricity has been widely investigated for memory and logic applications, including doped by Zr, Si, La, …etc. The double well of the energy landscape for ferroelectric (FE) materials brings data storage applications. Recently, due to the high demand for high dielectric constant material for advanced processes, ferroelectric HfO2-based materials are one of the candidates for the pathway. Besides, the technology also can be adopted in the backend of the line (BEOL) process due to the low thermal budget, and this benefits neuromorphic applications. As well as the high stored energy density of solid-state supercapacitors by HfO2-based material capacitors are exhibited for high potential performance. For scaling down power consumption and enhancing memory density, the feasible concept of coupling the $Hf_{1-x}Zr_xO_2$ is practicable into 3D architectures for low-power emerging memory.