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博士論文題目：

砷化鎵及磷化銦異質接面雙載子電晶體之銅金屬化導線製程研究

The Study of Copper-Metallized GaAs and InP Heterojunction Bipolar Transistors

Publication List

Journal Papers

1. **Shang-Wen Chang**, Edward Yi Chang, Cheng-Shih Lee, Ke-Shian Chen, Chao-Wei Tseng, and Tung-Ling Hsieh, "Use of WN_x as the Diffusion Barrier for Interconnect Copper Metallization of InGaP–GaAs HBTs", *IEEE Trans. Electron Devices*, vol. 51, No.7, pp.1053–1059, July 2004.
2. **Shang-Wen Chang**, Edward Yi Chang, Dhruves BISWAS, Cheng-Shih Lee, Ke-Shian Chen, Chao-Wei Tseng, Tung-Ling Hsieh, and Wei-Cheng WU, "Gold-Free Fully Cu-Metallized InGaP/GaAs Heterojunction Bipolar Transistor", *Jpn. J. Appl. Phys.*, vol. 44, No.1A, pp. 8-11, 2005.
3. **Shang-Wen Chang**, Edward Yi Chang, Cheng-Shih Lee, Ke-Shian Chen, Chao-Wei Tseng, Yong-Ye Tu, and Ching-Ting Lee, "A Gold-Free Fully Copper-Metallized InP Heterojunction Bipolar Transistor Using Non-Alloyed Ohmic Contact and Platinum Diffusion Barrier", *Jpn. J. Appl. Phys.*, vol. 44, No.28, pp. L899-L900, 2005.
4. H.C. Chang, E.Y. Chang, Y.C. Lien, L.H. Chu, **S.W. Chang**, R.C. Huang, and H.M. Lee, "Use of WN_x as Diffusion Barrier for Copper Airbridged Low Noise GaAs PHEMT", *Electron. Lett.*, vol. 39, No. 24, pp. 1763-1765, Nov. 2003.

Conference Papers

1. **S.W. Chang**, E.Y. Chang, K.S. Chen, T.L. Hsieh, and C.W. Tseng, "A Gold Free Fully Copper Metallized InGaP/GaAs HBT", *GaAs 2004*, 11-15 October 2004, Amsterdam, The Netherlands.
2. **Shang-Wen Chang**, Edward Yi Chang, and Cheng-Shih Lee, "Interconnect Copper Metallization of InGaP HBTs Using WN_x as the Diffusion Barrier", *ECS 2003*, April 27-May 2, 2003, Paris, France.