2006 ROCS WORKSHOP

PROCEEDINGS

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GaAs RELIABILITY AND QUALITY STANDARDS

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November 12, 2006
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ROCS Workshop - Reliability of Compound Semiconductors PROCEEDINGS

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2006 ROCS Workshop PROGRAM

NOVEMBER 12, 2006, HENRY B. GONZALEZ CONVENTION CENTER, SAN ANTONIO, TEXAS Sponsored by JEDEC JC-14.7 Committee on GaAs Reliability and Quality Standards, in cooperation with the IEEE.

7:30 AM REGISTRATION

8:00 AM WELCOME, OPENING REMARKS, INTRODUCTIONS, START
Anthony Immorlica, Workshop Chairman

SESSION I – RELIABILITY IN EMERGING TECHNOLOGIES/GaN
Sammy Kayali, Chair 1

8:10 AM **Failure Analysis of X-Band GaN FETs.** J. Jimenez, Chowdhury, Balistreri, Lee, and Saunier, *TriQuint Semiconductor,* Chao, Hu, Chu and A. Immorlica, *BAE,* del Alamo, and Joh, *MIT,* Shur, *RPI.* **NA**

8:35 AM **Performance Characterization, Repeatability, and Consistency of X-Band GaN HEMTs Prior to High Temperature RF Reliability Testing.** R. Shaw, D. Sanderlin, and J. DeJulio, *Accel-RF Corporation.* 3

9:00 AM **GaN-on-Si Reliability: A Comparative Study Between Process Platforms.** S. Singhal, A. Chaudhari, A. Hanson, J. Johnson, R. Therrien, P. Rajagopal, T. Li, C. Park, A. Edwards, E. Piner, I. Kizilyalli and K. Linthicum, *Nitronex Corporation.* **21**

9:25 AM **Effect of RF Stress on GaN HEMT Device Performance.** K. Boutros, and B. Brar *Teledyne Scientific Company,* W. Luo, *Northrop Grumman Space Technology.* **NA**

9:50 AM **Physical Investigation of High-Field Degradation Mechanisms in GaN/AlGaN/GaN HEMTs.** M. Faqir, A. Chini, G. Verzellesi, and F. Fantini, *University of Modena and Reggio Emilia,* F. Rampazzo, G. Meneghesso, and E. Zanoni, *University of Padova,* J. Bernat, *Research Centre Jülich,* P. Kordos, *Slovak Academy of Sciences.* 25

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11:10 AM **Analysis of Lead Free Tin Whisker Test Methodology and Characterization.** H. Cui, and M. Ferrara, *RF Micro Devices, Inc.*, M. Mlcak, *University of Texas.* 41

11:35 AM **Natural Failure Mechanisms: Analysis of Actual Field Returns.** Bill Roesch and Steve Brockett, *TriQuint Semiconductor, Inc.* 55

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1:55 PM **Complete Qualification of an Electron Beam Gate pHEMT Process.** H. Jen, C. Gil, P. Ersland, and S. Chu, *MA-COM.* 93

2:20 PM **The Effect of Gate Current on the Degradation of GaAs PHEMT MMICs.** Y. Chou, B-W Luo, D. Leung, Q. Kan, M. Biedenbender, R. Bhorania, R. Lai, D. Eng, D. Farkas, P. Chin, M. Wojtowicz, T. Block, and A. Oki, *Northrop Grumman Corporation.* 111

2:45 PM BREAK

SESSION IV – HBT RELIABILITY
William Roesch, Chair 115

3:15 PM **Measurement of Infant Mortality Rate in InGaP/GaAs HBT Technology.** K. Alt, R. Yeats, C. Hutchinson, D. Kuhn, T. Low, M. Iwamoto, M. Adamski, R. Shimon, T. Shirley, M. Bonse, F. Kellert, and D. D'Avanzo, *Agilent Technologies, Inc.* 117

3:45 PM **Electroluminescence as an Instrument to Observe Defect Generation in InGaP/GaAs HBTs.** R. Pazirandeh, U. Zeimer, J. Würfl, and G. Tränkle , *Ferdinand-Braun-Institut für Höchstfrequenztechnik.* 129

4:05 PM **A Simple, Small-Sized Protection Diode Design to Improve ESD Survivability on 2μm P InGaP HBT Devices.** H. Chou, F. Chou, C. Chen, S. Chen, and C. Wu, *WIN Semiconductors Corporation.* 139

4:30 PM **Defining the Safe Operating Area for HBTs With an InGaP Emitter Across Temperature and Current Density.** C. Whitman, *RF Micro* Devices, Inc. 151

4:55 PM BREAK

5:00 PM **Late Papers.**
Peter Ersland, Chair