

1984 IEEE - SISC TECHNICAL PROGRAM

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THURSDAY MORNING, DECEMBER 6, 1984

Session I: Electronic Properties of Interfaces

Chairmen: R. F. DeKeersmaecker, Leuven Univesity, Belgium; F. T. Feigl, Lehigh ; H. E. Boesch, Jr., Harry Diamond Labs

- 1.1 (Invited) Defect Structures in Amorphous SiO<sub>2</sub> and at the SiO<sub>2</sub>/Si Interface, D. L. Griscom, Naval Research Laboratory
- 1.2 Energy Distribution for the 1 and 2-Electron Levels of Amphoteric Interface States Generated at Low Temperature in MOS Structures, S. T. Chang\* and S. A. Lyon, Princeton University
- 1.3 Do Dangling Bond Electrons Cause the Urbach Tail in Si? C. H. Seager, P. M. Lenahan, K. L. Brower, and R. Mikawa, Sandia National Laboratories
- 1.4 Quantum Mechanical Considerations and Electrical Characterization of Metal (Silicide)-Silicon Interfaces K. Shenai,\* E. Sangiorgi, K. C. Saraswat, R. M. Swanson, and R. W. Dutton, Stanford University
- 1.5 Dependence of Channel Mobility on Gate Oxide Thickness in Very Thin Oxide MOSFETs, H-Q. Su,\* C-C. Wei, and T-P. Ma, Yale University
- 1.6 Techniques for Separating Interface and Trapped-Oxide Charge in MOS Structures; Use in Capacitor-Transistor Correlations P. S. Winokur, P. J. McWhorter, J. R. Schwank, and P. V. Dressendorfer, Sandia National Laboratories

\*Student participation partially supported by Conference

THURSDAY AFTERNOON, DECEMBER 6, 1984

Session II: Interface Structure and Chemistry

Chairmen: P. J. Grunthaner, JPL; J. T. Clemens, BTL;  
P. Balk, Aachen Technical University, FRC

- 2.1 (Invited) Chemical Characterization of Interfaces in Silicon Device Structures, C. R. Helms, Stanford University
- 2.2 Distribution of Dangling Bonds at the (111) Si-SiO<sub>2</sub> Interface, K. L. Brower, Sandia National Laboratories
- 2.3 Suboxide Distributions at the Si/SiO<sub>2</sub> Interface  
M. H. Hecht, P. J. Grunthaner, and F. J. Grunthaner, JPL/Caltech; N. Johnson, Xerox Palo Alto
- 2.4 Structural Study of PtSi/(111)Si Interface with High-Resolution Electron Microscopy, H. Kawarada, I. Ohdomari, and S. Horiuchi, Waseda University, Tokyo, Japan
- 2.5 A Physical Model for the Kinetics Mechanism of Thermal Nitridation of SiO<sub>2</sub>, M. M. Moslehi,\* C. J. Han, K. C. Saraswat, and C. R. Helms, Stanford University
- 2.6 Study of the Kinetics of the Thermal Nitridation of SiO<sub>2</sub>  
R. P. Vasquez and A. Madhukar, USC; F. J. Grunthaner, JPL; M. L. Naiman, MIT

THURSDAY EVENING, DECEMBER 6, 1984

POSTER SESSION

- P.1 A New Technique for Measuring the Charge-Pumping Current  
R. A. Wachnik and J. R. Lowney, National Bureau of Standards
- P.2 Monte-Carlo-Calculation of Electron Transport in SiO<sub>2</sub>-layers, H.-J. Fitting, Wilhelm-Pieck-Universitat Rostock, GDR
- P.3 Modeling MOS Capacitors to Extract Interface Trap Densities in the Presence of Arbitrary Doping Profiles  
H. S. Bennett, M. Gaitan, P. Roitman, T. J. Russell, and J. S. Suehle, National Bureau of Standards
- P.4 A Study of the Electrolyte-Insulator Interface with Ion Sensitive Field Effect Transistors (ISFET's)  
H. S. Wong,\* C. F. Chan, and M. H. White, Lehigh University
- P.5 Dependence of Radiation-Induced Interface States (D<sub>it</sub>) on Oxide Thickness in Etch-Back and As-Grown Oxides  
N. S. Saks, M. G. Ancona, and J. A. Modolo, Naval Research Laboratory
- P.6 Si-SiO<sub>2</sub> Interface State Investigation Under Optical Illumination, S. Kar, S. Varma, and K. V. Rao, Indian Institute of Technology, India

- P.7 The Generation of Slow States in SiO<sub>2</sub> Layers During Avalanche Injection and High-Field Stressing, M. M. Heyns\* and R. F. De Keersmaecker, Leuven University, Belgium
- P.8 Interface-Trap Generation Modeling of Fowler-Nordheim Tunnel Injection into Ultra-Thin Gate Oxide  
S. Horiguchi, T. Kobayashi, and K. Saito, Nippon Telegraph and Telephone Public Corporation, Japan
- P.9 An Electron Spin Resonance Study of Low Temperature Hole Trapping and Interface State Formation in MOS Structures  
S. A. Lyon, Princeton University; P. M. Lenahan, Sandia National Laboratories
- P.10 Recombination Along the Tracks of Heavy Charged Particles in SiO<sub>2</sub> Films, T.R. Oldman, Harry Diamond Laboratories

FRIDAY MORNING, DECEMBER 7, 1984

Session III: Advanced Device Structures; Compound Semiconductor Interfaces

Chairmen: S. A. Lyon, Princeton University; R. D. McGrath, TI; H. C. Card, University of Manitoba

- 3.1 (Invited) The Quantum Hall Effect, D. C. Tsui, Princeton University
- 3.2 (Invited) Modulation-Doped Heterojunction FETs, T. J. Drummond, Sandia National Laboratories
- 3.3 The Structure and Electronic Properties of GaAs/AlGaAs Layers Grown on Nonpolar Substrates by Molecular Beam Epitaxy, J. H. Mazur\* and J. Washburn, Lawrence Berkeley Laboratory; R. Fischer, W. T. Masselink, J. Klem, T. Henderson, and H. Markoc, University of Illinois
- 3.4 Charge Injection and Trapping in Multi-Dielectric Structures  
C. C. Chao\* and M. H. White, Lehigh University
- 3.5 Bistable Switching of Thin 80-100Å MOS Devices and Its Application to Optical Threshold Detection, T-C. Chen\* and R. C. Barker, Yale University

FRIDAY AFTERNOON, DECEMBER 7, 1984

Session IV: Advanced Fabrication Technology

Chairmen: R. R. Razouk, Fairchild R&D; J. M. Aitken, IBM; T. W. Ekstedt, HP; J. D. Plummer, Stanford

- 4.1 (Invited) Process Implications of Semiconductor Interfaces for VLSI, R. C. Joy, Gould AMI Semiconductors, Santa Clara, CA

- 4.2 Electrical Characterization of Front and Rear Interfaces of Silicon on Insulator Films Produced by Oxygen Implant  
S. Cristoloveanu, J. Brini, and J. Wyncoll, Institut National Polytechnique, Grenoble, France; R. P. Arrowsmith, British Telecom Research Labs, Ipswich, England; P. L. F. Hemment, University of Surrey, England
- 4.3 An Electrical Characterization of Low Temperature, High Pressure Thermal Silicon Dioxide, L. Trombetta and R. J. Zeto, USA ERADCOM; F. J. Feigl, Lehigh University
- 4.4 Electronically Ideal Surface Created by Fluorine Termination of Silicon Surface Bonds, E. Yablonovitch, B. R. Weinberger, and H. Deckman, Exxon Research and Engineering Company
- 4.5 Epitaxial Insulator/Semiconductor Interface: CaF<sub>2</sub> on Si  
L. J. Schowalter and M-J. Kim, General Electric Research and Development Center; R. W. Fathauer, Cornell University

SATURDAY MORNING, DECEMBER 8, 1984

Session V: Radiation and Hot Carrier Effects

Chairmen: D. R. Young, IBM; R. C. Barker, Yale University;  
R. C. Hughes, Sandia National Laboratories

- 5.1 (Invited) Generation of Interface States - A Critical Review of Data and Models, Pieter Balk, Aachen Technical University, Federal Republic of Germany
- 5.2 Implications of ESR Studies for Models of Interface-State Generation, R. E. Mikawa,\* P. M. Lenahan, and P. V. Dressendorfer, Sandia National Laboratories
- 5.3 Hole Trapping and Interface State Generation During Bias-Temperature Stress, S. K. Haywood,\* and R. F. DeKeersmaecker, Leuven University, Belgium; J. Butcher, Microelectronics Centre, Bounds Green, London
- 5.4 Characterization of Fast-States at the Si/SiO<sub>2</sub> Interface Generated by Hot-Carrier Injection, A. G. Sabnis and J. T. Nelson, AT&T Bell Laboratories
- 5.5 The Role of Hot Hole Injection and Trapping in the Long Term Degradation of n-Channel MOSFETs with Short Channel Lengths, F. Bauer and P. Balk, Aachen Technical University, Federal Republic of Germany
- 5.6 Interface State Generation in Thick Oxides, H. E. Boesch, Jr., Harry Diamond Laboratories
- 5.7 Direct Measurement of the Energy Distribution of Hot Electrons in SiO<sub>2</sub>, S. D. Brorson, D. J. DiMaria, M. V. Fischetti, P. M. Solomon, and D. W. Dong, IBM