Sanjay Banerjee is the Cockrell Family Regents Chair Professor of Electrical and Computer Engineering and Director, Microelectronics Research Center, at the University of Texas at Austin. He received his B.Tech from the Indian Institute of Technology, Kharagpur, and his M.S. and Ph.D. from the University of Illinois at Urbana-Champaign in 1979, 1981 and 1983 respectively, all in electrical engineering. As a Member of the Technical Staff, Corporate Research, Development and Engineering of Texas Instruments Incorporated from 1983-1987, he worked on polysilicon transistors and dynamic random access trench memory cells used by Texas Instruments in the world's first 4Megabit DRAM. He has been Assistant Professor (1987-90), Associate Professor (1990-93), and Professor (1993-) at The University of Texas at Austin. He has over 1000 archival refereed publications/talks, 10 books/chapters, and 30 U.S. patents, and has supervised over 80 Ph.D. and 70 MS students. His students have received 15 Best Papers Awards at various conferences, and he has presented over 150 invited talks. He received the Engineering Foundation Advisory Council Halliburton Award, 1991, the Texas Atomic Energy Fellowship (1990-1997), Cullen Professorship (1997-2001) and the Hocott Research Award from UT Austin (2007). He has won the SIA/SRC University Researcher Award (2017), IEEE Grove Award (2014), Distinguished Alumnus Award, IIT (2005), Industrial R&D 100 Award (2004), ECS Callinan Award, 2003, IEEE Millennium Medal, 2000, NSF Presidential Young Investigator Award in 1988, and several SRC Inventor Recognition and Best Paper Awards. He was a Distinguished Lecturer for IEEE Electron Devices Society, and the General Chair of the IEEE Device Research Conference, 2002. He is a Fellow of IEEE, APS and AAAS. He is active in the areas of beyond-CMOS nanoelectronic transistors based on 2D materials and spintronics, fabrication and modeling of advanced MOSFETs, and solar cells.

Sanjay Kumar Banerjee

Current Position: Cockrell Family Regents Chair in
Electrical and Computer Engineering, 1999-
Director, Microelectronics Research Center, 1999-

Education: University of Illinois, PhD (Electrical Engineering), 1983
University of Illinois, MS (Electrical Engineering), 1981
Indian Institute of Technology at Kharagpur, India, B. Tech (Electronics), 1979

Professional Engineer: Texas

Previous Positions: Cullen Trust Endowed Professorship in Engineering No.1, 1997-2001
University of Texas, Associate Director, Microelectronics Research Center, 1996-99
University of Texas, Professor, September 1993-
University of Texas, Associate Professor, September 1990- August 1993
University of Texas, Assistant Professor, September 1987- August, 1990
Texas Instruments, Corporate R& D, Member of Technical Staff, 1983-August 1987

Honors and Awards:
SIA/SRC University Research Award (2017)
IEEE Andrew Grove Award (2014)
Fellow of American Association for Advancement of Science (2007)
Hocott Research Award, Univ. of Texas, 2007
Fellow, American Physical Society, 2006
Distinguished Alumnus Award, IIT, 2005
Industrial R&D 100 Award (with R.Singh) 2004
Electrochemical Society Thomas D. Callinan Award, 2003
IEEE Millennium Medal, 2001
SRC Inventor Recognition Awards, 1994, 2000, 2009
Best Paper Awards (12) @ ISSCC, SRC TECHCON, DARPA, DRC
Who's Who Listings (Marquis)
Cullen Professorship, Univ. of Texas, 1997- 2001
Distinguished Lecturer for the IEEE Electron Devices Society (1997-2003), Adcom Member till 1998
Fellow of IEEE, 1996
Engineering Foundation Advisory Council Halliburton Award, 1991
Texas Atomic Energy Centennial Fellowship, 1990-97
NSF Presidential Young Investigator Award, 1988
Jagadis Bose National Science Talent Search Scholarships, India, 1974-79
Institute Medal and Swapan Saha Prize for Highest Ranking Undergraduate (ECE), I.I.T., India, 1979
Phi Kappa Phi

Professional Society and Major Government Committees:
Technical Advisory Board: Applied Novel Devices (current) AstroWatt, DSM Semiconductors, Cambrios, Nanocoolers Inc., BeSang Memories, Organic ID and ITU Ventures;Gerson Lehmann Group, NY; Austin Community College; Asia Pacific IIIT; Rochester Institute of Technology, HSMC Foundry

IEEE Dan Noble Award Committee, 2010-13 (Chair, 2012-13)
Congressional round-table panel member on nanotechnology, Feb. 2008
Member on International Technology Roadmap for Semiconductors
Siemens Westinghouse Science Talent Contest Judge, 2003
Morgan & Claypool Publishers, Lectures in Electronic Materials &Devices, Series Editor
SISPAD, Program Committee, 2005-6
Electrochemical Society Symposium on SiGe, Program Committee, 2004
IRPS, Program Committee, 2005
12th Int. Workshop on Physics of Semiconductor Devices, Int. Advisory Committee
Int. Advisory Committee, Int. Conf. on MEMS and Nanotechnology, IIT, 2005
Program Committee, International SiGe Technology and Device Meeting, 2004-2012
IEEE Device Research Conference Technical Program Chair, 2000-01, General Chair, 2001-02
Editorial Board, Elsevier Science, 2001
IEDM Program Committee, Modeling and Simulation, Session Chair, 2001-03
ECS Session Chair, Toronto, Canada, May 2000
Program Committee, IEEE Int. Conf. Communications, Computers, Devices, Kharagpur, 2000.
IEEE Device Research Conference Program Committee/Local Arrangements Chair, 1999-2000
NSF Workshop Co-Organizer for "Front and Back-end Processes", Austin, TX 1999
Eleventh Int. Ion Implant Tech. Meet. Program Committee and Publications Chair, 1995-1996.
IEEE Symposium on VLSI Technology, Committee Member, 1992-98
NSF Workshop Organizer for "Silicon-Germanium Devices", Austin, TX 1999
IEEE University Government Industry Microelectronics Symp., General Chairman, 1994-1995
IEEE International Electron Devices Meeting, (Device Technology/ Session Chair: 1989-90)
IEEE Conf. on Electromagnetic Field Computation, Chair Comp. in Electron Dev., CA, 1992
Panel Member, SRC Conference on Integration of Novel Processes, 1991

Sponsored Research:

Grant title: "Three-Dimensional IC Technology,"
Co-Principal Investigator:S.Banerjee
Other Investigators: D.L. Kwong
Sponsoring Agency: Texas Advanced Technology Program
Duration: June 1988-August 1990.

Grant title: "High Speed Devices and VLSI Structures by Laser-Enhanced Epitaxy,"
Principal Investigator: S.Banerjee
Sponsoring Agency: Texas Advanced Technology Program
Duration: June 1988-August 1990.

Grant title: "Optoelectronic Devices by Photo-enhanced Chemical Vapor Deposition,"
Principal Investigator: S.Banerjee
Sponsoring Agency: National Science Foundation PYI
Duration: August 1988- July 1993.

Grant title: "GaAs-on-Si MESFET Modeling,"
Principal Investigator: S.Banerjee
Sponsoring Agency: Texas Instruments, Inc.
Duration: December 1988- August 1989.

Grant title: "Understanding and Modeling of Unit Processes"
Co-Investigator: S.Banerjee
Other Investigators: W.Adcock (PI), A.Tasch (Co-PI), I.Trachtenberg (Co-PI), D.Kwong, J.Lee, T.Edgar and J.Ekerdt
Sponsoring Agency: SEMATECH and SRC
Duration: December 1988- August 1993.

Grant title: "RPCVD Epitaxial Silicon and Insulators for Use in 3-D CMOS Integrated Circuits,"
Co-Investigator: S.Banerjee
Other Investigators: A.Tasch (P.I.), A.Cowley and R.Jones
Sponsoring Agency: Office of Naval Research
Duration: Sept. 1987- March 1990.

Grant title: "Ballistic and Quantum Transport in Si Devices at Cryogenic Temperatures"
Principal Investigator:S.Banerjee
Other Investigators: J.Lee
Sponsoring Agency: Texas Advanced Technology Program
Duration: November 1989- November 1991.

Grant title: "Polysilicon Transistor Modeling,"
Principal Investigator: S.Banerjee
Sponsoring Agency: Motorola
Duration: September, 1991-August, 1993.

Grant title: "Acquisition of High Resolution Transmission Electron Microscope,"
Principal Investigator: L.Rabenberg
Other Investigators: S.Banerjee, J.Goodenough, A.Heller, P.Ho and A.Manthiram
Sponsoring Agency: National Science Foundation
Duration: 10/92-10/93

Grant title: "Atomic Layer Epitaxy of Group IV Semiconductors,"
Co-Principal Investigator: S.Banerjee
Other Investigators: A.Tasch (P.I.), A.Cowley, J.Ekerdt and R.Jones
Sponsoring Agency: Office of Naval Research
Duration: February 1991-August 1996.

Grant title: "Materials and Bulk Processes"
Co-Investigator: S.Banerjee
Other Investigators: A.Tasch (PI), D.Kwong, J.Lee
Sponsoring Agency: SRC/ SEMATECH
Duration: September 1993- August 1998.

Grant title: "Synthesis, Growth and Analysis of Electronic Materials,"
Co-Investigator: S.Banerjee
Other Investigators: J.White (P.I) and 11 others from ECE, Chemistry and Physics
Sponsoring Agency: National Science
Duration: March 1991- March, 1996.

Grant title: "Transport in MOSFETs"
Principal Investigator: S.Banerjee
Sponsoring Agency: Motorola
Duration: August, 1993-August, 1994.

Grant title: "Flash EEPROMs"
Principal Investigator: S.Banerjee
Sponsoring Agency: AMD
Duration: May, 1993-December, 1996.

Grant title: "LDO Thin Film Transistors"
Principal Investigator: S.Banerjee
Sponsoring Agency: Micron
Duration: March, 1993- April, 1995.

Grant title: "Ultra Shallow Junction Technology"
Principal Investigator: S.Banerjee
Sponsoring Agency: SEMATECH
Duration: January 1994- December 1996.

Grant title: "SIMS Analysis of Polysilicon-on-Silicon"
Principal Investigator: S.Banerjee
Sponsoring Agency: SEMATECH
Duration: September 1994- August 1995.

Grant title: "RTP Implant Monitors"
Principal Investigator: S.Banerjee
Sponsoring Agency: SEMATECH
Duration: September 1995- August 1996.

Grant title: "Ultra-shallow Junction Formation and 2-D Dopant Profiling"
Principal Investigator:S.Banerjee
Other Investigators: K.Shih

Sponsoring Agency: Texas Higher Education Coordinating Board
Duration: January 1996- December 1997.

Grant title: "Analysis of Deep Submicron MOSFETs"
Principal-Investigator: S.Banerjee
Other Investigators: A.Tasch
Sponsoring Agency: Semiconductor Research Corporation
Duration: October 1998- September 1999.

Grant title: "Unrestricted Grant"
Principal Investigator: S.Banerjee
Sponsoring Agency: Various Donors
Duration: No expiration

Grant title: "Synthesis, Growth and Analysis of Electronic Materials,"
Co-Investigator: S.Banerjee
Other Investigators: J.White (P.I) and 11 others from ECE, Chemistry and Physics
Sponsoring Agency: National Science Foundation STC
Duration: March 1996- February, 2002.

Grant title: "Ultra-shallow Junction Process Integration"
Principal Investigator: S.Banerjee
Sponsoring Agency: SEMATECH
Duration: September 1997- December 2001.

Grant title: "Si and Ge Thin Film CVD, Modeling and Control"
Co-Principal Investigator: S.Banerjee
Other Investigators: J.Ekerdt (P.I.), M.Downer, I.Trachtenberg; Univ. of Wisconsin
Sponsoring Agency: Dept. of Defense-MURI
Duration: July 1995-July 2000

Grant title: "Ultra-shallow Junction Technology"
Principal Investigator:S.Banerjee
Sponsoring Agency: Texas Higher Education Coordinating Board
Duration: January 1998- August 2000.

Grant title: "Channel Engineering in Si-Ge-C MOSFETs "
Principal-Investigator: S.Banerjee
Other Investigators: A.Tasch
Sponsoring Agency: Semiconductor Research Corporation
Duration: October 1997- September 2000.

Grant title: "Advanced Annealing"
Principal Investigator:S.Banerjee
Sponsoring Agency: Texas Higher Education Coordinating Board
Duration: January 2000- December 2001.

Grant title: "Quantum Transport in Heterostructure MOSFETs "
Principal-Investigator: S.Banerjee
Other Investigators: A.Tasch
Sponsoring Agency: Semiconductor Research Corporation
Duration: October 1999- September 2002.

Grant title: "Front End Processing"
Principal-Investigator: S.Banerjee
Other Investigators: A.Tasch, D.Kwong, J.Lee
Sponsoring Agency: SRC/ SEMATECH
Duration: April 1998- March 2001.

Grant title: "Vertical Si-Ge-C MOSFETs "
Principal-Investigator: S.Banerjee
Sponsoring Agency: Semiconductor Research Corporation
Duration: September 2000-August 2003.

Grant title: "Compact Modeling of Gate Current"
Principal-Investigator: S.Banerjee
Other Investigators: F.Register
Sponsoring Agency: Semiconductor Research Corporation
Duration: July 2000- September 2003.

Grant title: "Ion Implantation Modeling"
Principal-Investigator: S.Banerjee
Other Investigators: A.Tasch
Sponsoring Agency: Semiconductor Research Corporation
Duration: July 2000- September 2001.

Grant title: "Front End Processing"
Principal-Investigator: S.Banerjee
Other Investigators: D.Kwong, J.Lee, F.Register
Sponsoring Agency: SRC/ SEMATECH
Duration: April 2001- March 2003.

Grant title: "MARCO Focus Center on Device Structures"
PI at UT: S.Banerjee
Other Investigators: D.Kwong (with MIT, Stanford, UC Berkeley)
Sponsoring Agency: DARPA/SRC
Duration: Award announced February 2001 (3 year contract)

Grant title: "SiGe Flash EEPROMS with Quantum Dot Gates"
Principal Investigator:S.Banerjee
Sponsoring Agency: Texas Higher Education Coordinating Board
Duration: January 2002- December 2003.

Grant title: "MARCO Focus Center on Device Structures"
Principal-Investigator: S.Banerjee
Other Investigators: D.Kwong (with MIT, Stanford, UC Berkeley)
Sponsoring Agency: DARPA/SRC
Duration: Sept. 2003 (3 year contract)

Grant title: "High mobility Ge-channel MOSFETs "
Principal-Investigator: S.Banerjee
Sponsoring Agency: Semiconductor Research Corporation
Duration: September 2003-August 2006.

Grant title: "Monte Carlo and Quantum transport "
Principal-Investigator: S.Banerjee
Co-PI: L.F.Register
Sponsoring Agency: Semiconductor Research Corporation
Duration: September 2003-August 2006.

Grant title: "NIRT on Quantum Dot Memories "
Principal-Investigator: S.Banerjee
Other Investigators:J.Ekerdt, F.Register, G.Hwang
Sponsoring Agency: NSF
Duration: September 2003-August 2007.

Grant title: "High mobility Ge-channel MOSFETs "
Principal-Investigator: S.Banerjee
Sponsoring Agency: Texas Higher Education Coordinating Board
Duration: January 2004-Dec. 2005.

Grant title: "Advanced Materials Research Center"
Principal-Investigator: S.Banerjee
Other Investigators: 15 others
Sponsoring Agency: Texas
Duration: January 2004- Dec.2005

Grant title: "Advanced Processing and Prototyping Center"
Principal-Investigator: S.Banerjee
Other Investigators: 18 others
Sponsoring Agency: DARPA
Duration: 2005- Dec.2006

Grant title: "SiGe Nanostructures"
Co-Principal-Investigator: S.Banerjee,
Other Investigators: R.Huang
Sponsoring Agency: DOE
Duration: 2006- Dec.2009

Grant title: "Dopant Diffusion Modeling"
Principal-Investigator: S.Banerjee,
Other Investigators: G.Hwang
Sponsoring Agency: SRC
Duration: 2006- Dec.2009

Grant title: "NNIN "
Site Director: S.Banerjee
Sponsoring Agency: NSF
Duration: January 2004- August.2015

Grant title: "MARCO MSD Focus Center "
UT PI: S.Banerjee
Sponsoring Agency: DARPA/SRC
Duration: Sept. 2007-2012

Grant title: "CERA"
Principal-Investigator: S.Banerjee
Co-PIs: F.Register, R.Ruoff, E.Tutuc, A.Macdonald, D.Akinwande
Sponsoring Agency: DARPA/IBM
Duration: Sept. 2007-2012

Grant title: "NASCENT ERC "
Principal-Investigator: Bonnecaze, Sreenivasan
Banerjee (Device Thrust co-Leader)
Sponsoring Agency: NSF
Duration: January 2013- Feb.2018

Grant title: "Bay Area PV Conssortium led by Stanford/Berkeley"
Sponsoring Agency: DOE
Duration: Sept. 2015- August.2017

Grant title: "South West Academy of Nanoelectronics"
Director: S.Banerjee,
Other Investigators: F.Register, A.MacDonald and 15 others from 6 schools
Sponsoring Agency: SRC-NRI
Duration: 2006- Dec.2018

Grant title: "NSF-NNCI "
Site Director: S.Banerjee
Sponsoring Agency: NSF
Duration: Sept. 2015- August.2020

Grant title: "MURI-Room Temperature Polariton Condensates "
Principal-Investigator: Hui Deng (Michigan),
Co-PIs: S.Banerjee and 4 others
Sponsoring Agency: DoD MURI
Duration: Sept. 2017- August.2020

Ph.D. supervision:
Keun Park, 1991
Ting Hsu, 1991
Sean Lian, 1991
Shubneesh Batra,1992
Sittampalam Yoganathan, 1992
Burt Fowler, 1992
David Kinosky, 1993
Surya Bhattacharaya, 1993
Brain Li, 1994
Le-tien Jung, 1994
Avinash Mahajan, 1994
Chung-you Hu, 1995
Indrajit Manna, 1995
Akif Sultan, 1996
Dean Samara, 1997
Soji John, 1998
Jacob Liu, 1999
Rajan Sharma, 1999
Ed Quinones, 1999
David Kencke, 2000
Christine Ouyang (with Tasch), 2000
Xiangdong Chen, 2001
Taehoon Kim, 2001
Siva Mudanai (with Tasch), 2001
Geng Wang (with Tasch), 2001
Yang Chen (with Tasch), 2001
Xin Wang, 2002
Hong-Jyh Li, 2002
Sung –Bo Hwang (with Edgar), 2002
Di Li (with Tasch), 2002
Yang-Yu Fan (with Register) 2002
Zhonghai Shi, 2002
Tat Ngai, 2002
Dong-Won Kim, 2003
Xiao Chen (with Rabenberg), 2003
Puneet Kohli, 2003
David Onsongo, 2003
Kartik Jayanarayan, 2004
Tongsheng Xia, (with Register), 2005
Taras Kirichenko (with Hwang), 2005
James Chen, 2005
Swaroop Ganguly (with MacDonald), 2006
Fei Lei (with Register), 2006
Li Lin (2006)
Sagnik Dey (2006)
Xiangdong Fan (with Register) 2006

Yueran Liu, 2006
David Kelly, 2006
Xiaofeng Fan (with Register) 2006
Bahniman Ghosh (with Register) 2007
Sachin Joshi, 2007
Joy Sarkar, 2007
Joseph Donnelly, 2009
Davood Shahrjerdi, 2008
Shan Tang, 2008
Rownak Zaman, 2008
Ning Kong, 2009
Yonghyun Kim, 2010
Hai Liu 2010
Dipanjan Basu (with Register), 2010
Tackhwi Lee, 2010
Se Hoon Lee, 2011
Ferdousi Fahmida, 2011
Jamil Mustafa, 2011
John David (with Register) 2011
Jung Hwan Yum, 2012
Seyoung Kim, (with Tutuc) 2012
Chang, Jiwon, (with Register) 2013
Priyamvada Jadaun, (with Register) 2013
Yujia Zhai, (with Willson) 2013
Michael Ramon (with Akinwande) 2013
Emmanuel Oneyagam, 2014
Sayan Saha, 2015
Urmimala Roy (with Register) 2015
Jason Mantey, 2015
Donghyi Koh (2016)
Chris Corbet (with Tutuc) 2016
Sangwoo Kang (2016)
William Hsu (2016)
Andreas Hsieh (2017)
Tanuj Trivedi (with Neikirk) (2017)

M.S.:
D.Bullock, 1990
K.Picone, 1991
J.Shen, 1991
R.Kovelamudi, 1992
S.Krishnan, 1992
M.Lobo, 1992
S.Ngaoram, 1993
A.Khan, 1993
D.Khanderkar, 1993
H.Taufique, 1994
S.Madireddi, 1994
J.Fretwell, 1995

M.Craig, 1995
J.Williamson, 1995
K.Reddy, 1995
J.Damiano, 1995
R.Gupta, 1995
K.Hassan, 1996
A.Lentvorski, 1997
S.Oswal, 1998
C.Seal, 1998
V.Agarwal, 1999
S.Nandan, 1999
S.Ravi, 1999
T.Ngai, 1999
V.Medina, 1999
H.Rahman, 1999
C.Twu, 2000
S. Oak, 2001
G. Shrivastava, 2001
R. Deppensmith, 2002
M. Swaminathan, 2002
L. Lin, 2003
L.Weltzer, 2004
D.Ahmad, 2005
I.Wiedmann, 2005
S. Ramachandran, 2005
A.Nanda 2007
N. Jain, 2008
N.Vora, 2008
K. Varahramyan, 2008
S. Kaur, 2010

Postdocs: Samit Ray (Chair Physics, IIT), Mark Loewe (IBM), Amitava Das (startup), Sabrina Grannan (NASA JPL), Freek Prins (Germany), Chuanbin Mao (Chair Prof. Oklahoma), Bhagawan Sahu (Global Foundries), Mathew Gilbert (Assoc. Prof. UIUC), Donwan.Ahn (Korea), Domingo Ferrer (IBM), Aparna Gupta (IIT), Samaresh Gucchait (Maryland), Sushant Sonde (Argonne), SeHoon Shin (Samsung), Victor Chi, Sarmita Majumder, Anupam Roy, Priyamvada Jadaun

Currrent Post-docs: Marylene Palard, Anupam Roy, Sarmita Majumder, Bahniman Ghosh, Rudresh Ghosh

In progress:
Hema Chandra Movva
Amritesh Rai
Andreas Hsieh
Stephen Sczepaniak
Tanmoy Pramanik
Rik Dey
Atresh Sanne
Harry Chou
Tanuj Trivedi
Jaehyun Ahn
Omar Mohammed
Aqyan Bhatti
Sayema Chowdhury

Books and Invited Book Chapters:

1. Solid State Electronic Devices, 5th Ed. (2000), 6th Ed. (2005), 7th Ed. (2015), Prentice-Hall by B.Streetman and S.Banerjee
2. Effect of Surface Nitridation on the Electrical Characteristics of Germanium High-κ/Metal Gate Metal-Oxide-Semiconductor Devices, D. Q. Kelly, J. J.-H. Chen, S. Guha, and S. K. Banerjee. Invited Book chapter, Springer, 2007.
3. SiGe HFETs, S.Banerjee, The Silicon Heterostructure Handbook, 2005, Edited by John Cressler.
4. High-k Gate Dielectrics, Y.Fan. S.Mudanai, L. Register and S.Banerjee, 2003
5. Device Miniaturization and Simulation, S.Banerjee and B.Streetman in ULSI Devices, John Wiley, 2000 (C.Chang and S.Sze editors)
6. Dopant Diffusion, S.Banerjee in Handbook of Semiconductor Manufacturing Technology, Marcel Dekker, 2000, 2006 (Y.Nishi, B.Doering and J.Kilby editors).
7. Silicon-germanium Devices, S.Banerjee, Elsevier, 2001.
8. Novel 3D CMOS, S.Dey and S.Banerjee, Solid State Electronics Trends, 2009
9. X. Mou, L. F. Register and S. K. Banerjee, "Ultra-low-power pseudospintronics devices via exciton condensation in coupled two-dimensional material systems," in Nanoscale Materials and Devices for Electronics, Photonics and Solar Energy, Ed. Stephen Goodnick, Anatoli Korkin and Robert Nemanich, Springer, 2015
10. D. Reddy, L. F. Register and S. K. Banerjee, "Bilayer pseudoSpin Field Effect Transistor (BiSFET)" in "Beyond CMOS Logic Switches," T.-J. King and K. Kuhn, Eds., Cambridge: Cambridge Univ. Press, 2015.

Patents:

United States Patent 8,709,892, 2014
Nanoparticles in a flash memory using chaperonin proteins

United States Patent 8,629,427, 2014
Topological insulator-based field-effect transistor

United States Patent 8,263,967, 2012
Bi-layer pseudo-spin field-effect transistor

United States Patent 8188460, 2012
Bi-layer pseudo-spin field-effect transistor

United States Patent 8,198,707, 2012
Establishing a uniformly thin dielectric layer on graphene in a semiconductor device without affecting the properties of graphene

United States Patent 8,008,649, 2011
Incorporating gate control over a resonant tunneling structure in CMOS to reduce off-state current leakage, supply voltage and power consumption

US Patent 6,744,083, 2004

Submicron MOSFET having asymmetric channel profile

US Patent 6,420,219, 2002
Thin film transistor and method

US06320202
Bottom gated thin film transistors comprising Ge in a channel region

US06,319,799, 11/20/2001
High mobility heterojunction transistor and method

US06,313,486, 11/06/2001
Floating gate transistor having silicon germanium channel layer

US06,313,487, 11/06/2001
Vertical channel floating gate transistor having SiGe channel layer

US06214652
Thin film transistor and method of forming thin film transistors

US06,200,839
Methods of making thin film transistors

US06166398 12/26/2000 Thin film transistors

US06017782 01/25/2000 Thin film transistor and method of forming thin film transistors

US05985703 11/16/1999 Method of making thin film transistors

US05977560 11/02/1999
Thin film transistor constructions with polycrystalline silicon-germanium alloy doped with carbon in the channel region

US05953596 09/14/1999
Methods of forming thin film transistors

US05936262 08/10/1999 Thin film transistors

US05904513 05/18/1999 Method of forming thin film transistors

US05665981 09/09/1997
Thin film transistors and method of promoting large crystal grain size in the formation of polycrystalline silicon alloy thin films

US05548132 08/20/1996
Thin film transistor with large grain size DRW offset region and small grain size source and drain

and channel regions

US05546340 08/13/1996
Non-volatile memory array with over-erase correction

US05436474 07/25/1995
Modulation doped field effect transistor having built-in drift field

US05432366 07/11/1995 P-I-N MOSFET for ULSI applications

US05109259 04/28/1992 Multiple DRAM cells in a trench

US05066607 11/19/1991
Method of making a trench DRAM cell with dynamic gain

US04999811 03/12/1991
Trench DRAM cell with dynamic gain

US04969019 11/06/1990 Three-terminal tunnel device

US04864374 09/05/1989
Two-transistor dram cell with high alpha particle immunity

US04713678 12/15/1987
dRAM cell and method

1. M. Keever, H. Shichijo, K. Hess, S.Banerjee, L. Witkowski, H. Morkoc and B. Streetman, "Measurements of Hot-Electron Conduction and Real Space Transfer in GaAs-AlGaAs Heterojunction Layers,"*Appl. Phys. Lett.*, 38(1), 36-38, January 1981.

2. S.Banerjee and B. Streetman, "Experimental Studies of Laterally Seeded Recrystallized Polysilicon on Silicon Dioxide," *Proc. of IEEE UGIM*, v.5, pp.79-83, May 1983.

3. S.Banerjee and B. Streetman, "Theoretical and Experimental Study of Swept Line Electron Beam Annealing of Semiconductors," *J. Appl. Phys.*, 54(6), 1947-1955, June 1983.

4. S.Banerjee and B. Streetman, "Electron and Hole Traps in Silicon-on-Oxide Grown Using Lateral Epitaxy by Seeded Solidification," *J. Phys. D: Appl. Phys.*, November 1983.

5. S.Banerjee, R. DeJule, K. Soda and B. Streetman, "Planar Be-Implanted GaAs Junction Formation Using Swept-Line Electron Beam Annealing," *IEEE Trans. Elec. Dev.*, 30 (12), 1755-1760, December 1983.

6. S.Banerjee, B. Lee, J. Baker, D. Reed and B. Streetman, "Annealing of Ion-Implanted Silicon-on-Insulator Films Using a Scanned Graphite Strip Heater," *Thin Solid Films*, 115, 19-26, 1984.

7. H. Shichijo, S. Malhi, A. Shah, G. Pollack, W. Richardson, M. Elahy, S.Banerjee, R. Womack and P. Chatterjee, "TITE RAM: A New SOI DRAM Gain Cell for MBit DRAMs," *Proc. of ICSSDM,* v. 16, pp. 265-268, June, 1984.

8. S.Banerjee, R. Tong, B. Lee, R. DeJule, B. Streetman and H. Lam, "Implantation and Annealing Studies of Laterally Seeded Recrystallized Silicon on Silicon Dioxide," *J. Electrochem. Society*, 131(6), 1409-1416, June 1984.

9. G. Pollack, W. Richardson, S. Malhi, T. Bonifield, H. Shichijo, S.Banerjee, M. Elahy, A. Shah, R. Womack and P. Chatterjee, "Hydrogen Passivation of Polysilicon MOSFETs From a Plasma Nitride Source," *IEEE Elec. Dev. Letters*, 5(11), 468-470, November 1984.

10. S.Banerjee, M. Elahy, H. Shichijo, G. Pollack, W. Richardson, S. Malhi, A. Shah, P. Chatterjee, H. Lam and R. Womack, "Comparison of Accumulation and Inversion Mode LPCVD Polysilicon MOSFET Characteristics for Memory Applications," *IEEE Trans. Elec. Dev.*, 31(12), 1983, December 1984.

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874. Leonard F. Register and Sanjay K. Banerjee, "Southwest Academy of Nanotechnology (SWAN)," The Eight International Nanotechnology Conference on Communication and Cooperation, Tsukuba, Japan, May 8-11, 2012, **Invited**

875. Sanjay. Banerjee, Leonard F. Register, Emanuel Tutuc, Dharmendar Reddy, Dipanjan Basu, Mohammad Mehedi Hasan, and Hui Chen, "Tunnel FETs," SEMATECH TFET Workshop, Austin Texas, **Invited**

876. S.Banerjee, SWAN, GOMAC Las Vegas, March 2012, **Invited**

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