Husam N. Alshareef

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EDUCATION

• Post-Doctoral Researcher	Sandia National Laboratory, USA	1995-1996
• PhD in Materials Science & Engineering	North Carolina State University, USA	1992-1995
• M.S. in Materials Science & Engineering	North Carolina State University, USA	1990-1992
• B.S. in Ceramics Engineering	Alfred University, New York, USA	1986-1990

PROFESSIONAL APPOINTMENTS

- **Professor,** Materials Science & Engineering — 2013- now
  King Abdullah University of Science & Technology (KAUST)
- **Program Chair,** Materials Science & Engineering — 2013-2016
  KAUST, Saudi Arabia
- **Associate Professor,** Materials Science & Engineering — 2009-2013
  KAUST, Saudi Arabia
- **Research Professor,** Materials Science & Engineering — 2007- 2009
  University of Texas at Dallas, USA
- **Member of Technical Staff** — 2001-2007
  Texas Instruments, Inc., Dallas, USA
- **Sr. Staff Engineer** — 1999-2001
  Conexant System, Newport Beach, USA
- **Member of Technical Staff** — 1996-1999
  Micron Technology, Inc., Boise, USA

RESEARCH INTERESTS

Professor Alshareef's research interests are the development of **Nanomaterials for Renewable Energy and Electronics**.

SCHOLARLY ACTIVITY

- **400** publications, mostly in peer-reviewed journals
- **70** issued patents. Several of which entered volume production.
- **18,500** citations with H-index of **74** (Google Scholar)
- **$15M** of Competitive Research Funds Raised
- **200** invited/contributed presentations and tutorials
- **23** PhD, **5** MS students and **20** post-doctoral researchers supervised
- Three book chapters

HONORS/AWARDS

- Highly Cited Researcher (2019) by Web of Sciecne/Clarivate Aanalytics
- Fellow, American Physical Society (2019)
- Fellow, Royal Society of Chemistry (2018)
- Kuwait Prize in Clean and Sustainable Energy Technologies (2018)
- KAUST Distinguished Teaching Award (2018)
- Elected IEEE Distinguished Lecturer in Nanotechnology (2017)
- A.H. Shoman Prize for Excellence in Energy Research (2016)
- DOW Sustainability Competition Award (2015) (with my student Dr. Anas Abu-Taha)

- Co-Chair of the Materials Research Society (**MRS**) Fall Meeting (2014). Meeting held in Boston, USA, with 52 simultaneous symposia and 6500 attendees.
- DOW Sustainability Competition Award (2011) (with my student Dr. Wei Chen)
- SEMATECH Corporate Excellence Award (2006)
- Elected Senior Member of IEEE (2004)
- Sandia National Laboratory Post-doctoral Fellowship (1995-1996)
- U.S. Department of Education Electronic Materials Fellowship (1991-1994)
- North Carolina State University Dean's Fellowship (1990)
- BS Degree with High Honors, Magna Cum Laude (1990)
- Seth Sprague Physics Award (1988)
- UN Outstanding Undergraduate Student Fellowship (Jan. 1986 - Dec. 1989)

AWARDS FOR MY STUDENTS & POST-DOCS

- Young Research Award for my student Xiangming at the 12th International Symposium on Flexible Organic Electronics, ISFOE 2019, Thessaloniki, Greece, July 1-4, 2019
- Best Poster Award for my post-doc Hao Wu at the International Conference on Advanced Materials Technologies (ICMAT) 2019 (organized and run by the Singapore Materials Research Society, S-MRS), June 22-28, 2019
- Winner (2nd Place) Falling Walls Competition by post-doc Yizhou Zhang at KAUST's Annual Falling Walls Competition (Based on His Work on Artificial Skin). Yizhou will travel to Berlin to participate in the International Falling Wall Competition in December 2018.
- Best Poster award for Kaust Gifted Student Program Student Eman Elhajji at the BASF Poster Competion held April, 2018 in Research Triangle Park (BASF Reseach Center), NC, USA, for her work on laser asssited formation of hard carbon anodes for Na ion batteries
- Best Poster Award for PhD student Chuan Xia at the Singapore Materials Research Society Meeting (ICMAT), June, 2017 for his work on ternary transition metal chalcogenides for energy applications
- Post-doc Rakhi Raghavan's paper in Nano Letters (**Nano Letters 12, 2559 (2012)**) was the most cited science article in Saudi Arabia between 2006 and 2016 (with all idigenous authors) according to Thomson-Reuters report on scientific research in the Middle East (Report published Jan. 28, 2017).
- Best Poster Award (1st Place) for my student Zhenwei Wang in the IEEE Electron Device Society Competition, KAUST, January 23, 2017.
- Best Poster Award (2nd place) for post-doc Dhinesh Velusamy in the Annual Winter Enrichment Competition at KAUST(campus wide competition), January 15, 2017
- Best PhD Student Award in the Division of Physical Sciences & Engineering & KAUST for my student Chuan Xia for Publishing 18 papers during the first three years of his PhD (2016)
- Best Poster Award for my student Zhenwei Wang at the 6th Annual Meeting on Transparent Conducting Materials (TCM), Chania, Greece (2016)
- Second Place Award ($6000 prize) for my student Nuha Alhebshi by the Arab League for Education, Culture, & Science (ALECSO). Awards is for Creativity and Technical Innovation for the Young Researchers of the Arab Homeland (2015).
- National Saudi Olympiads Award (Third place) for my summer intern Mansour Dabbagh for his work on Sodium Ion Batteries (March 2016).
- Best Poster Award for Student Bilal Ahmed at the 2015 WEP Poster Competition at KAUST for his work on Sodium Ion Batteries (January, 2015)
- Outstanding Post-Doc Award ($5000 prize) for my post-doc Narendra Kurra for his work on flexible energy storage devices by SABIC Sponsored Competition (June, 2015)
- Best Poster Award (third place) for my student Anas Abu-Taha at the MRS Sustainability Poster Competition at the Materials Research Society in Boston, MA (December, 2014).
- Best Poster Award for PhD student Alfonso Caraveo at the International Colloquium on Flexible Electronics and Photovoltaics, KAUST (November 3-5, 2013).
- Best Presentation Award, PhD Student Wei Chen at the 2013 Nanotechnology Conference in Macau, China (2013).

- SABIC Award for Innovations in Plastic Electronics for PhD student Adnan Khan (April 2013)
- Outstanding Post-Doc Award ($5000 prize) for my post-doc Rakhi Raghavan for her work on energy storage (SABIC sponsored competition) (June, 2013)
- Academic Excellence Award for my PhD student Adnan Khan ($10000 prize, January, 2013)
- Academic Excellence Award for my PhD student Wei Chen ($10000 prize, January, 2012)
- Best Poster Award at IMRC-MRS Meeting for my PhD student Alfonso Caraveo (8/2011)
- INTEL Corporation ISEF Award -Third place in Best of Category Competition at the Intel International Science Fair for my student Fatimah Al-Ajaji (Pittsburgh,USA, May 13-18, 2012)
- Best Poster Award, Second Place, in the National Science Olympiads for our Student Intern Fatimah Al-Ajaji (Riyadh, Saudi Arabia in March 21, 2012).
- Best Poster Award (1st place) at the Annual Materials Science Poster Competition at KAUST for my student Wei Chen (November, 2011)
- Best Poster Award (second place) during the university-wide poster competition held during the KAUST Winter Enrichment Program (WEP) in 2011 for my student Wei Chen (2011)
- Best Presentation Award, Ruiqi Wang, Summer Intern through Saudi Research Summer Institute (SRSI), KAUST, July, 2014.

SERVICE to KAUST

- Member, Academic Council (Elected) 2017-now
- Member, Nanofabrication Facility User Committee 2018-now
- Program Chair, Materials Science & Engineering 2013-2016
- Member, Faculty Promotion & Hiring Committee 2015-present
- Chair, MSE Program Faculty Hiring Committee 2010-present
- Member, KAUST Community Affairs Committee 2015- present
- Chair, Nanofabrication Facility User Committee 2010-2014
- Member, University Curriculum Committee 2009-2011
- Member, Materials Science & Engineering Curriculum Committee 2009-2013
- Member, Academic Council (Elected) 2011-2013
- Member, KAUST Analytical Chemistry Lab Committee 2010-2012
- Member, Winter Enrichment Program Organizing Committee 2010-2013
- Member, Core Laboratory Policy Task force 2011-2012
- Member, Visiting Student Policy Task force 2011-2012

SERVICE to SCIENTIFIC COMMUNITY

- Member, Materials Research Society (MRS) New Meetings Subcommittee 2012-present
- Chair, MRS University Chapter Subcommittee 2016-present
- Founding Faculty Advisor of the MRS Student Chapter at KAUST 2012-present
  This was the first international MRS student chapter outside USA
- Member of Editorial Board, *ACS Applied Materials & Interfaces* 2015-2017
- Member of Editorial Board, *Small Methods* (A Wiley Journal) 2016-present
- Member Editorial Board, *EnergyChem* (Elsevier) 2018-present
- Member of Editorial Board, *Energy Storage* (Wiley) 2019-present
- Member Editorial Board, Open Electrochemistry Journal 2009-present
- Associate Editor, *J. Electronic Materials* 2009-2013
- Guest Editor, Materials Research Society Feb 2011 MRS Bulletin 2011
- Co-organizer of several symposia at international and local meetings (see list below)
- Advisory Board Membership for Various International Meetings Ongoing
- Proposal reviewer for various USA, Europe, and Asia funding agencies Ongoing
- Frequent reviewer for top-rated journals Ongoing
- External thesis reviewer for different countries Ongoing

MEETING & SYMPOSIA ORGANIZATION

- Lead Organizer of Symposium titled "Capacitive Energy Storage: Fundamentals, Materials, and Devices", for the **MRS** 2018 Spring Meeting in Phoenix, USA (April 2-6, 2018).
- Co-Organizer of Symposium ES1, "Materials & Chemistries for Grid Scale Energy Storage", at the Materials Research Society (**MRS**) Meeting, Boston, USA, Nov. 28-December 2, Fall 2016
- Faculty Advisor for the First Ever Student-Organized Symposium at the Materials Research Society (**MRS**) Fall Meeting, Nov. 28-December 2, Fall 2016 (Boston, MA).
- Lead Organizer, "Symposium on Flexible & Large Area Electronics" at the International Materials Research Congress (**IMRC, Cancun MRS**), August 16-20, 2015, Cancun, Mexico.
- **General Co-Chair, Materials Research Society (MRS) Fall 2014 Meeting (Boston, USA) (Nearly 6500 attendees)**
- Co-Organizer, "International Conference on Functional Nanomaterial Design, Synthesis, and Applications", KAUST. March 16-20, 2014.
- Lead Organizer, "1st International Workshop on Energy Storage at KAUST", which was held at KAUST September 23 and 24, (2013).
- Co-Organizer, Special Session on Thermoelectric Thin Films at the Materials Research Society (**MRS**) Meeting in Boston, USA (November, 2012).
- Co-Organizer of the "Large-Area & Flexible Electronics" symposium at the International Materials Research Congress (**IMRC, Cancun MRS**) in August, 2012, Cancun, Mexico.
- Co-Organizer of the "Large-area & Flexible Electronics" symposium at the International Materials Research Congress (**IMRC, Cancun MRS**) in August, 2010, Cancun, Mexico.
- Member of the International Advisory Board of the "Frontiers in Theoretical and Applied Physics Meeting" at the American University of Sharjah February, 2017 (FTAPS 2017). Chair of session on Materials Science. MRS-Endorsed meeting.
- Member of Scientific Committee, 4th International Conference on Nanomaterials, IIT Madras, India held in October, 2012.
- Member of Scientific Committee, Thermoelectric Symposium, European Materials Research Society (E-MRS), May 2011 (Nice, France).
- Member of Scientific Committee, Fourth International Meeting on Dielectric Materials, May 29-31, 2013, (Marrakesh, Morocco).
- Session Chair at tens of conferences are around the world.

PROFESSIONAL MEMBERSHIPS

- Member of Materials Research Society (MRS)
- Member of the Electrochemical Society (ECS)
- Member of the American Ceramic Society (ACS)
- Member of the American Physical Society (APS)
- Senior Member, Institute of Electrical and Electronics Engineers (IEEE)
- Member of the Editorial Board, ACS Applied Materials & Interfaces (ACS), Small Methods (Wiley), and Open Electrochemistry Journal

SUPERVISION & MENTORSHIP

Post-Doctoral Fellow Advising

Post-doc Name	University	Appointment Period
Dr. Wenli Zhang	KAUST	2017-
Dr. Yunpei Zhu	KAUST	2017-

Dr. Saurabh Kumar	KAUST	2017-
Dr. Yizhou Zhang	KAUST	2017-
Dr. Kang-Hyuck Lee	KAUST	2016-
Dr. Rajesh Kumar	KAUST	2015-2017
Dr. Hanfeng Liang	KAUST	2015-
Dr. Dhinesh Velusamy	KAUST	2015-
Dr. Narendra Kurra	KAUST	2012-2017
Dr. Mrinal Hota	KAUST	2013-
Dr. Pranati Nayak	KAUST	2015-2017
Dr. Sarath Kumar	KAUST	2010-2015
Dr. R.B. Rakhi	KAUST	2010-2015
Dr. Pradipta Nayak	KAUST	2011-2015
Dr. Nagaraju Doddahalli	KAUST	2013-2015
Dr. Ji Hoon Park	KAUST	2013-2015
Dr. Shahid Muhammad	KAUST	2012-2014
Dr. Unnat Bhansali	KAUST	2010-2013
Dr. Mahmoud AlAhamd	KAUST	2010-2011

Graduate Student Advising

Student Name	University	Degree	Graduation Date
Eman Elhajji	KAUST	PhD	2022
Thesis Title:	"Laser Scribed Graphene for Energy Applications"		
Guo Jing	KAUST	PhD	2021
Thesis Title: "Layered Oxide Cathodes for Aqueous Zn ion Batteries"			
Fangwang Ming	KAUST	PhD	2021
Thesis Title: "Layered Materials for Energy Storage Applications"			
Yongjiu Lei	KAUST	PhD	2020
"MXene Based Printed Electrochemical Sensors and Devices"			
Hyunho Kim	KAUST	PhD	2019
Thesis Title: "Synthesis and Applications of 2D Transition Metal MXenes"			
Wenxi Wang	KAUST	PhD	
Thesis Title: "Farbrication and Integration of Solid State Zn Ion Batteries"			
Jehad El Demellawi	KAUST	PhD	2019
Thesis Title: "Optical Propertie of Two Dimensional (2D) Carbidess"			
Fan Zhang	KAUST	PhD	2019
Thesis Title: "Two-Dimensional Electrodes for Na-ion Batteries"			
Xiangming Xu	KAUST	PhD	2020
Thesis Title: "2D Semiconductors formed by Ion Exchange for Electronic and Sensing Applications""			
Chuan Xia	KAUST	PhD	2018
Thesis Title: "Ternary Metal Chalcogenide Electrodes for Electrochemical Energy Storage"			
Ahmed Bilal	KAUST	PhD	2018
Thesis Title: "MXene Composites for Na Ion Battery Applications"			
Zhenwei Wang	KAUST	PhD	2018
Thesis Title: "p-type Oxide Semiconductors for Transparent & Energy Efficient Electronics"			
Jiang Qiu	KAUST	PhD	2019
Thesis Title: "Engineering of Pseudocapacitive Materials and Device Architecture for on-Chip Energy Storage"			
Fwza Alshamari	KAUST	PhD	2018
Thesis Title: "Thin Film Transistors and Devices with Multilayer Channel and Dielectrics"			
Xinwei Wang	KAUST	PhD	2020
Thesis title: "Perovskite Based Phototransistors"			
Zhixiong Liu	KAUST	PhD	2020
Thesis title: "Perovskite Based Photodetectors"			
Wei Chen	KAUST	PhD	2013
Thesis Title: "Nanostructured MnO_2 Electrodes for Supercapacitor Applications"			

Anas Abu Taha KAUST PhD 2015
Thesis Title: “Nanostructured Thermoelectric Oxides for Energy Harvesting Applications”
Nuha Al-Hebshi KAUST PhD 2015
Thesis Title: “Ni-Based Electrodes for Energy Storage Applications”
M. Adnan Khan KAUST PhD 2013
Thesis Title: “Polymer Ferroelectric Memories for Flexible & Transparent Electronics”
Alfonso Caraveo KAUST PhD 2013
Thesis Title: “p-Type Transparent Oxide Semiconductors for Emerging Electronics”
Mahmoud Almadhoun KAUST MS 2011
Thesis Title: “Graphene-Polymer Nanocomposites for Capacitive Energy Storage”
Yaocai Bai KAUST MS 2012
Thesis Title: “Reduced Graphene Oxides as Electrode Materials for Supercapacitors”
Nulati Yesibolati KAUST MS 2013
Thesis Title: “Modification of SnO_2 Anodes by Atomic Layer Deposition for High Performance Lithium Ion Batteries”
Amir Hanna KAUST MS 2012
Thesis Title: “Transport Properties of Ferroelectric Polymer P(VDF-TrFE) Memories”
Erika Fuentes UT Dallas* PhD 2013
Thesis Title: “Relaxor Thin Films for Energy Harvesting Using the Piezoelectric Effect”
Rahul Gupta UT Dallas* PhD 2011
Thesis Title: “Electrical Contacts for Bi2Te3 Thermoelectrics”
Wardia Debray UT Dallas* MS 2010
Thesis Title: “Solution-Derived Piezoelectric Thin Films for Energy Harvesting Applications”
*Co-advisor

PhD Student Committee Membership

Danilo Granato (MS, 2012); Safdar Nazir (PhD, 2012); Deborah Marques (PhD, 2013); Hao Wang (2013); Yasir Said (PhD, 2012); Sergiy Grytsiuk (PhD, 2016); Kaloni Thaneshwor (PhD, 2013); Rami Afandy (PhD, 2016); Garret Mckerricher (PhD, 2015). Mohammad Alnasser (PhD, 2015); Muhammed Z. Khan (PhD, 2015);Eyad Arabi (PhD, 2015); Yang Yang (PhD, 2016); Akosa Collins (PhD, 2016); Mahmoud Ouda (2016);Maged Abdelsamie (PhD, 2016); Salma Alrasheed (PhD, 2017); Ahmed Mansour (PhD, 2016); Hanlin Hu (PhD, 2017); Noktan Alyami (PhD, 2017); Shahid Sattar (PhD, 2018);Ru-Ze Liang (2018); Muhammad Rizwan Khan (PhD, 2018); Valeriya Chernikova (PhD, 2017); Basamat Shahin (PhD 2019). Aditya Prabaswara (PhD, 2019); Ibrahim Dursun (PhD, 2019); Azimul Mohamed (2019); Abdullah Alsalloum (MS, 2019); Jiakai Liu (PhD, 2019). Davide Priante (PhD, 2019). Jasmin Smajić (PhD, 2019);

TEACHING EXPERIENCE

Class	University	Level	Frequency
Electronic Properties of Materials	KAUST	Graduate	4 semesters
Thermodynamics of Materials	KAUST	Graduate	3 semesters
Materials for Energy	KAUST	Graduate	3 semesters
Functional Oxides*	KAUST	Graduate	2 semesters
Crystallography	KAUST	Graduate	1 Semester
Nanoelectronics**	KAUST	Graduate	1 Semester
Introduction to Materials Science	KAUST	Graduate	1 Semester
Ceramics & Metals	UT Dallas	Graduate	1 Semester
Defects & Diffusion*	UT Dallas	Graduate	1 Semester

*Newly developed course,**co-taught

OUTREACH ACTIVITIES

- Frequent tutorials and lectures at universities and schools in the Kingdom of Saudi Arabia and the Middle East region
- Regular hosting of KAUST elementary and high school students for science demonstrations in my laboratory

- Annual participation in the Saudi Research Science Institute (SRSI), where gifted high school students are hosted in our laboratory at KAUST. Modeled after MIT RSI program
- Hosting engineers from Saudi companies (eg SABIC & ARAMCO) in my laboratory
- Thesis committee membership at multiple schools in the Middle East and USA
- Member of the KAUST Schools parent council (2011-2012)
- Frequent evaluator of university promotion files for regional and international universities

RESEARCH GRANTS

- Principal Investigator, "Rational Design of Electrode Materials for Capacitive Deionization of Water". Grant amount: US$1,037,8000 (my portion is $662,000 over three years). Funding Source: KAUST Internal Competitive Research Grant (CRG 8) program. **Pending**. Co-PI: Professor Noreddine Ghaffour, KAUST and Prof. Yury Gogotsi, Drexel University.

- Principal Investigator, "Rational Design of Electrode Materials for Aqueous Zn Ion Batteries". Grant amount: US$840,000 (my portion is $500,000 over three years). Funding Source: KAUST Internal Competitive Research Grant (CRG 7) program. Start Date: 01 April 2019- 31 March 2022. Co-PI: Professor Yi Cui, Stanford University.

- Principal Investigator, "Metal Organic Frameworks for Capacitive Energy Storage". Grant amount: US$1,039,000 (my portion is $550,000 over three years). Funding Source: KAUST Internal Competitive Research Grant (CRG 6) program. Start Date: 01 April 2018, End Date: 31 March 2021. Co-PI: Professor Mohamed Eddaoudi.

- Principal Investigator, "Double Transition Metal Carbides for Capacitive Energy Storage". Grant amount: US$1,045,000 (my portion is $700,000 over three years). Funding Source: KAUST Internal Competitive Research Grant (CRG) program. Start Date: 01 April 2017, End Date: 30 March 2020. Co-PI (Yury Gogotsi at Drexel University, USA).

- Co-principal Investigator, "Direct Elemental Quantification of Carbon-Based Electrode Materials", Grant amount: US$1,000,000 (my portion is $200,000 over three years). Funding Source: KAUST Internal Competitive Research Grant (CRG) program. Start Date: 01 April 2017, End Date: 30 March 2020.

- Principal Investigator, Capital Equipment Grant for Atomic Layer Deposition System. Grant Amount: $172,000. Funding Source: KAUST Central Capital Equipment Funds Managed by Office of Vice President for Research. Start Date: December 2016 to End Date: N/A.

- Principal Investigator, "Polymer-Assisted Exfoliation of Two-Dimensional Materials for Energy Storage Applications". Funding Source: Saudi Basic Research Industries Corporation (SABIC). Grant amount US$622,000. Start Date: January 2016 and End Date: January 2019.

- Principal Investigator, "Self-Powered Sensors for Wearable Personalized Healthcare Monitoring", Grant Amount US$2.1 Million (my portion is $360,000 over 3 years). Start Date: January 2016 to End Date: January, 2019. This is a four-institution grant (KAUST, Georgia Tech, UCLA, and Regensburg University).

- Principal Investigator, Capital Equipment Grant for Automated Spray Coating System. Funding Source: KAUST Central Capital Equipment Funds Managed by Office of the Vice President for Research. Grant Amount: $92,000. Start Date: April 2016 to End Date: N/A.

- Principal Investigator, "Two-Dimensional MXenes for Electronics and Energy Applications", Grant amount US$ 1.35 Million (my portion is $800,000 for three years). Funding Source: KAUST Internal Competitive Research Grant (CRG) Program. Start Date: March 2015 and End Date: March 2018. Co-

PI (Yury Gogotsi at Drexel University, USA).

- Co-Principal Investigator, “Design and Processing of Electroactive Materials for Energy Storage and Delivery”. Funding Source: KAUST Internal Competitive Research Grant (CRG) Program. Grant Amount: US$ 987,816 (my portion was $450,000 for three years). Start Date: October 2012 and End Date: October 2015. (PI: Pierre Beaujuge at KAUST).

- Principal Investigator, Capital Equipment Grant for Thermoelectric Measurement System. Funding Source: KAUST Central Capital Equipment Funds Managed by Office of the Vice President for Research. Grant Amount: $92,000. Start Date: April 2016 to End Date: N/A.

- Co-Principal Investigator, “Fully Printable Complimentary Electronics on Flexible Substrates”, Collaborative Project with Imperial College, England. Funded by the KAUST-Imperial Academic Excellence Alliance Fund. Grant amount: US$2.4 Million (my portion was $360,000 for three years).Start Date: July 2012 and End Date: July 2015. (PI: Natalie Stingeli at Georgia Tech, USA).

- Principal Investigator, “Liquid Cell Microscopy of Supercapacitor and Battery Electrodes”. Funding source: IBM and KAUST. Grant Amount US$200,000 (my portion was $110,000). Start Date: March 2012 and End Date: March 2013. (Co-PI: Frances Ross at IBM).

- Principal Invetigator, “1st Intenrational Conference on Energy Storage at KAUST”, Funding Source: KAUST. Grant Amount: $88,000. September 21-23, 2013.

- Principal Investigator, “Graphene Based Electrodes for Enhanced Supercapacitor Performance”. Funded by Saudi National Science Funding Agency (KACST). Grant amount: US$172,000. Start Date: July 2012 and End Date: July 2014.

- Principal Investigator, “Energy Harvesting and Waste Heat Recovery Using Oxide Thermoelectrics”. Funded by KAUST Competitive Reserach Grant (CRG) Program. Grant Amount: US$1.5million (my portion was $893,000). Start Date: March 2011 and End Date: March 2014. (Co-PI: Terry Tritt at Clemson University, USA).

- Principal Investigator, “Polymer Based Flexible Electronics”. Funded by Saudi Basic Industries Corporation (SABIC). Grant Amount US$422,000. Start Date: March 2011 and End Date: March 2014.

- Principal Investigator, “Rectenna Device for Energy Harvesting”. Collaborative Research Project with Imperial College, England. Funded by KAUST-Imperial Academic Excellence Alliance Fund. Grant amount: US$660,000 (my portion was $160,000 over two years). Start Date: March 2011 and End Date: March 2013. (Co-PI Martyn Mclaughlin at Imperial College).

- Principal Investigator, “Functional Nanomaterials for Energy and Electronics”. KAUST Start-up Fund. Grant amount; US$3,000,000 for five years (My portion is $3,000,000). Start July 2009- and End July 2014.

United States Funding Sources

- Co-Principal Investigator, “High Density Piezoelectrics for Energy Harvesting from Vibration”. Funded by the US National Science Foundation, NSF, STTR Program. Grant amount: $130,000 Start Date: September 2008 and End Date: September 2011. (PI: Pradip Shah, Texas Micropower, Inc., USA)

- Principal Investigator, “Metal Electrodes for Nanoscale Electronic Devices”. Funded by Texas Instruments, Inc. Grant amount: $142,000. Start Date: January 2008 and End Date: January 2009. (Co-PI: Robert Wallace and MA Quevedo-Lopez at UT Dallas, USA).

- Principal Investigator, “Contacts for Thermoelectrics Devices”. Funded by the II-VI Corporation. Grant Amount: US$110,000. Start Date: August 2008 to End Date: August 2009. (Co-PI: Bruce Gnade at UT Dallas, USA).

- Co-Principal Investigator, “Flexible Schottky Diode Arrays for Fingerprint Detector”. Funded by e-Smart Technologies. Grant Amount: US$140,000. Start Date: August 2008 and End Date: September 2010. (PI: MA Quevedo-Lopez at UT Dallas, USA).

- Co-Principal Investigator, “Flexible and Woven Electronics”. A subcontract from Tyler University to UT Dallas. Grant Amount: US$800,000. Start Date: October 2007 and End Date: October 2009. (PI: Bruce Gnade at UT Dallas, USA).

LIST OF PUBLICATIONS

https://scholar.google.com/citations?user=shnVzdcAAAAJ&hl=en

2019

1. Y.P. Zhu, Z. Wang, J. Ming, D.H. Anjum, **H.N. Alshareef**, “ Chemical coupling strategy for enhanced Li+ storage and diffusion kinetics”, Energy Storage Materials (under review)

2. Q. Li, Y. Wu, Z. Wang, H. Ming, W.i Wang, D. Yin, L. Wang, **H.N. Alshareef**, Jun Ming, “Highly Stable Oxide Anodes Comprising Vertically Aligned Carbon Nanotubes and Metal Ions Transfer Diffusion Layer for Lithium-Ion Batteries”, Advanced Energy Materials, (under review)

3. Z. Liu, L.u You, N.Faraji, CH Lin, JH He, J. Seidel, J. Wang, **H.N. Alshareef**, and Tom Wu, “Single-Crystal Hybrid Perovskite Platelets on Graphene: Mixed-Dimensional van der Waals Heterostructures and Interfacial Charge Transfer”, Advanced Functional Materials (under Review)

4. K. Lee, Y. Zhang, Y. Lei, H. Kim, and **H.N. Alshareef**, “MXene Nanogenerator using Ultrasound”, (in preparation)

5. L. Zhou, J. Zhang, Y. Wu, W.Wang, H. Ming, Q. Sun, L. Wang, J. Ming, **H.N. Alshareef**, “Understanding Ostwald Ripening and Surface Charging Effects in Solvotheramlly-prepared Metal Oxide-Carbon Anodes for High Performance Rechargeable Batteries”, Advanced Energy Materials (accepted)

6. C. Yang, J. K. El-Demellawi, Z. Chen, J.n Yin, DB Velusamy, A.M. Emwas, A.M. El-Zohry, O. M. Bakr, **H.N. Alshareef**, and Omar F. Mohammed, “$MAPbI_3$ single crystals free from hole trapping centers yield a 21.6% solar cell efficiency and exceptional photodetectivity”, ACS Energy Letters (in revision)

7. J. Guo, J. Ming, Y. Lei, W. Zhang, C. Xia, Yi Cui, **H.N. Alshareef**, “Artificial solid electrolyte interphase for suppression of surface reactions and dissolution in aqueous zinc ion batteries”, ACS Energy Letters (under review)

8. Y.P. Zhu, Y. Lei, F. Minga E. Abou-Hamad, A.Emwas, **H.N. Alshareef** , “Charge redistribution in heterostructured MXene and g-C_3N_4 for high-rate lithium intercalation”, Nano Energy **65** (2019) 104030.

9. C. Xia, P. Zhu, Q. Jiang, Y. Pan, W. Liang, E. Stavitsk, **H.N. Alshareef**, and H. Wang, “Continuous production of pure liquid fuel solutions via electrocatalytic CO2 reduction using solid-electrolyte devices“ Nature Energy 4, 776–785 (2019).

10. N. Noriega, H. Wang, X. Wang, K. Juan, A. Levitt, Ji. Li, N. Kurra, **H.N. Alshareef**, Y. Gogotsi "MXene-Conducting Polymer Electrochromic Microsupercapacitors" Energy Storage Materials 20 (2019) 455-461.

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400. P.D. Hren, S.H. Rou, **H.N. Alshareef**, M.S. Ameen, O. Auciello, and A. I. Kingon, , "Bottom Electrodes for Integrated Pb(Zr,Ti)O_3 Films", Integrated Ferroelectrics **2**,311(1992).

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401. **H.N. Alshareef**, K.D. Gifford, M.S. Ameen., O. Auciello, and A. I. Kingon, "Processing and Electrical Characterization of Ion Beam Sputter-Deposited PZT Thin Films", Ceramic Transactions 25, 97(1991).

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403. M.S. Ameen , T.M. Graettinger, S.H. Rou, **H.N. Alshareef**, K.D.Gifford, O. Auciello, and A. I. Kingon, "Processing and Structural Characterization of Ferroelectric Thin Films Deposited by Ion Beam Sputtering", MRS Symposium Proceedings **200**, 65(1991).

404. Kingon, M.S. Ameen , O. Auciello, K.D.Gifford, **H.N. Alshareef**, T.M. Graettinger, S.H. Rou and P.D. Hren, "Processing-Structure Relations for Ferroelectric Thin Films Deposited by Ion Beam Sputter-Deposition", Ferroelectrics **116**, 35(1991).

BOOK CHAPTERS

1. M.A. Quevedo and **H. N. Alshareef**, “Functional Thin Films for Silicon Based Technology”, edited by F. J. Espinoza-Beltrán, Research Signpost Publishers (2010). (ISBN978-81-308-0354-8).

2. D. Dimos, W. L. Warren, and **H.N**. **Alshareef**, "Thin Film Ferroelectric Materials and Devices”, edited by R. Ramesh, Kluwer Academic Publishers (Boston, 1997). ISBN 0-7923-9993-5.

3. **H.N. Alshareef** and A. I. Kingon, "Ferroelectric Thin Films: Synthesis and Basic Properties", Vol 10, edited by J.F. Scott, C.A. Paz de Araujo, and G. W. Taylor, Gordon and Breach Science Publishers, New York (1996). ISBN 2-88449-189-9.

LIST OF PRESENTATIONS

1. **H.N. Alshareef**, “Electrochemical Microsupercapacitors for Nanosystem Applications”, Presented at the 4th International Conference on Nano Energy and Nanosystems, Beijing, China (June 15, 2019). Plenary.

2. **H.N. Alshareef**, “Integration of Thin Film Electronics and Electrochemical Microsupercapacitors”, Presented at International Symposium on Enhanced Electrochemical Supercapacitors (ISEECap), Nantes, France, May 8, 2019. Invited.

3. Yizhou Zhang and **H.N. Alshareef**, “Hydrogels Stretch and Heal Better with MXene”, MRS April 2019 Pheonix, AZ, USA

4. Dhinesh Velusamy, Jehad El-demelawy, Husam N. Alshareef, “*Plasmonic MXene Thin Films for Flexible Visible-Light Photodetectors*”, presented at the Materials Research Society (MRS) April 23, 2019, Pheonix, Arizona, USA.

5. **H.N. Alshareef**, “On Chip Electrochemical Energy Storage”, University of Texas at Dallas, Dallas, Texas, December 13, 2018. Invited.

6. **H.N. Alshareef**, "IEEE Distinguished Lecture in Nanotechnology", University of Texas Houston, Houston, Texas, December 7, 2018. Invited.

7. **H.N. Alshareef**, 2018 Kuwait Prize Award Lecture, "Electrode Material Design Strategies for Capacitiive Energy Storage", Kuwait Institute for Scientific Research (KIST). December 2, 2018, Invited.

8. **H.N. Alshareef**, "Two Dimensional Materials for Energy Harvesting and Storage", Harvard University, November 26, 2018. Invited.

9. **H.N. Alshareef**, "Rational Design of Nanostructured Electrodes for Capacitive Energy Storage", Materials Research Society, November 26, 2018, . Invited.

10. **H.N. Alshareef**, "Layered Oxide Cathodes for Zinc Ion Batteries", 2nd International Conference on Energy Storage Materials, Tsinghua University, Shenzhen, China, November 8-11, China. Invited.

11. **H.N. Alshareef**, "Transparent Electronics using Oxide Semiconductors and 2D Materials", 7th International Conference on Transparent Conducting Materials, October 14-18, 2018. Crete, Greece. Invited.

12. **H.N. Alshareef**, "Electrode Material Design Stratgies for Efiicient Energy Storage", Georgia Institute of Technology, Atlanta, GA (July, 7 2018). Invited.

13. Jehad El-Demellawi, Sergei Lopatin, Omar Mohammed, **H.N. Alshareef**, "Spatial Mapping of Multipolar Surface Plasmons in $Ti_3C_2T_x$ MXenes", Presented at Materials Research Society (MRS) Meeting, November 27, 2018. Boston, USA.

14. Fangwang Ming, H. Liang, Y. Lei, W. Zhang, **H.N. Alshareef**, "Solution Synthesis of VSe_2 Nanosheets and their Alkali Metal Ion Storage", Presented at Materials Research Society (MRS) Meeting, November 27, 2018. Boston, USA.

15. F. Zhang, Eman Alhajji, Yongjiu Lei, Narendra Kurra, **H.N. Alshareef**, "Highly Doped 3D Graphene Na-ion Battery Anode by Laser Scribing Polyimide Films in Nitrogen Ambient", Presented at the Materials Research Society (MRS) Meeting, November 27, 2018. Boston, USA.

16. Qiu Jiang, C. Wu, Z. Wang, J.H. He, ZL Wang, and **H.N. Alshareef**, "Integrating MXene Electrochemical Microsupercapacitor with Triboelectric Nanogenerator as Self-charging Power Unit", Presented at Materials Research Society (MRS) Meeting, November 26, 2018. Boston, USA.

17. **H.N. Alshareef** and Chuan Xia**,** "Large Intercalation Capacitance in VO_2(B) Layered Oxides" Presented at the Materials Research Society (MRS) Spring Meeting, April 2-6, 2018 (Phoenix, USA).

18. **H.N. Alshareef** and Qiu Jiang "Asymmetric MXene-RuO_2 Supercapacitor with Wide Voltage Window" Presented at the Materials Research Society (MRS) Spring Meeting, April 2-6, 2018 (Phoenix, USA).

19. Zhenwei Wang and **H.N. Alshareef**, "Large-Area Chemical Vapor Deposited MoS_2 with Transparent Conducting Oxide Contacts toward Fully Transparent 2D Electronics", Presented at the Materials Research Society (MRS) Fall Meeting, Nov 29, 2017. (Boston, USA)

20. Zhenwei Wang and **H.N. Alshareef,** "Hybrid van der Waals p–n Heterojunctions based on SnO and 2D MoS_2" Presented at the Materials Research Society (MRS) Fall Meeting, Nov 29, 2017. (Boston, MA, USA)

21. Fan Zhang and **H.N. Alshareef,** "Effect of the Number of Atomic Layers in 2D SnO on Na Ion Battery Performance, Presented at the Materials Research Society (MRS) Fall Meeting, Nov 27, 2017. (Boston, MA, USA)

22. Hanfeng Liang and **H.N. Alshareeef,** "Low Temperature Synthesis of Ternary Metal Phosphides by Plasma for Asymmetric Supercapacitors", Presented at Materials Research Society (MRS) Fall Meeting, Nov 27, 2017

23. C. Xia and **H.N. Alshareef**, "Anamolous Li Ion Storage in Non-layered 2D MoO_2", Presented at the Materials Research Society (MRS) Fall Meeting, Nov 27, 2017. (Boston, USA)

24. **H.N. Alshareef**, "Nanomaterial Design Strategies for Capacitive Energy Storage", Presented at The Nantech Institute and Department of Chemistry, Universoty of Texas at Dallas, December 7, 2017. Invited.

25. **H.N. Alshareef**, "2D Materials for Energy Storage Applications", Presented at Energy Materials 2017, Dallas, Texas, December 6, 2017. Invited.

26. **H.N. Alshareef**, "Fully Transparent Indium-Free Oxide Electronics Entirely Deposited by Atomic Layer Deposition", Presented at IEEE Nanotechnology Materials and Devices Conference (NMDC) 2017 Singapore October 4-7,2017. Invited.

27. Narendra Kurra and **HN Alshareef,** "MXene-on-paper Microsupercapacitors", presented the European Materials Research Society Meeting, Strasbourg, France , 2017.

28. **H.N. Alshareef,** "Indium-free Fully Transparent Oxide Electronics Entirely Deposited by Atomic Layer Deposition"**,** Presented at the International on Materials for Adanced Technologies (ICMAT) Singapore (June, 2017). Invited.

29. **H.N. Alshareef,** "Microsupercapacitor Materials & Devices", Presented at the International on Materials for Adanced Technologies (ICMAT) Singapore (June 2017). Invited.

30. **H.N. Alshareef,** "Transparent Electronics: Materials and Devices", presented at the "CMOS Emerging Technologies Conference", Poland (May, 2017).

31. **H.N. Alshareef**, "Asymmetric Microsupercapacitors with Vertically Scaled 3D Current Collectors", preseneted at the Materials Research Society (MRS) Spring Meeting (April 20, 2017). Phoenix, USA

32. **H.N. Alshareef**, "2D Material-Oxide Heterojunctions for Electronic & Sensing Applications", presented at Frontiers in Theoretical and Applied Physics Conference (American University of Sharja, February 22, 2017)

33. Fan Zhang and **H.N. Alshareef**, "2D $SnSe_2$ Anodes for Advanced Na Ion Batteries", presented at the Materials Research Society (MRS) Fall Meeting in Boston, USA, November 27-December 2, 2016.

34. Narendra Kurra, **H.N. Alshareef**, Yury Gogotsi, "MXene-polymer Composites for Na Ion Batteries", presented at the Materials Research Society (MRS) Fall Meeting in Boston, USA, November 27-December 2, 2016.

35. Fwzah Alshamri, Jihoon Park, **H.N. Alshareef**, "Precise Control of Threshold Voltage of Thin Film Transistors Using Multilayer Channels", presented at the Materials Research Society (MRS) Fall Meeting in Boston, USA, November 27-December 2, 2016.

36. **H.N. Alshareef** "Nanomaterial Design Strategies for Capacitive Energy Storage", presented at the 4th Saudi International Nanotechnology Conference", King Fahad University for Petroleum & Minerals (KFUPM), Dhahran (October 26, 2016). Invited.

37. Narendra Kurra, Q. Jiang, and **H.N. Alshareef**, "Marker Pen lithography for flexible and curvilinear on-chip energy storage"–Oral presentation at 229th ECS meeting@ San Diego, CA, USA. (San Diego, CA, 30 May 2016).

38. **H.N. Alshareef** "Oxide Semiconductors for Energy & Electronics", presented at the 6th Annual Meeting on Transparent Conducting Materials", Chania, Crete, Greece (October 12, 2016). Invited.

39. Zhenwei Wang & **H.N. Alshareef**, "Indium-Free Fully Transparent Devices Deposited Entirely by ALD", presented at the 6th Annual Meeting on Transparent Conducting Materials", Chania, Crete, Greece (October 13, 2016).

40. Zhenwei Wang & **H.N. Alshareef**, "Two Dimensional van der Waals Heterojunctions based on SnO/WS_2", presented at the 6th Annual Meeting on Transparent Conducting Materials", Chania, Crete, Greece (October 12, 2016).

41. Mrinal Hota & **H.N. Alshareef**, "Resistively Switched Memory based on Binary HfZnOx", presented at the 6th Annual Meeting on Transparent Conducting Materials", Chania, Crete, Greece (October 12, 2016).

42. Mrinal Hota & **H.N. Alshareef**, "SnO based Nanoscale Resistive RAM", presented at the 6th Annual Meeting on Transparent Conducting Materials", Chania, Crete, Greece (October 12, 2016).

43. **H.N. Alshareef** "Indium-Free Fully Transparent Devices & Circuits Deposited Entirely by ALD","presented at the International Materials Research Congress", Cancun, Mexico (August 16, 2016). Invited.

44. **H.N. Alshareef**, "Nanomaterial Design and Fabrication Strategies for Micro supercapacitors", PACRIM (American Ceramic Society), Clear Water, FL (April 14, 2016). Invited.

45. **H.N. Alshareef**, "Micro capacitors for On-Chip Energy Storage" presented at the 144th Annual Meeting & Exhibition of TMS (The Materials, Metals, and Minerals Society) Society, MARCH 15-19, 2015 • Orlando, FL, USA. Invited.

46. **H.N. Alshareef**, "Nanostructured Semiconductors for Energy Storage Applications", Seminar at Regensburg University Department of Chemistry, Regensburg, Germany (December 14, 2015). Invited.

47. **H.N. Alshareef**, "Semiconductor Oxide Thermoelectric Superlattices for Waste Heat Recovery", Seminar at California Lutheran University, Los Angeles, CA, USA (November, 2015). Invited.

48. **H.N. Alshareef** and Sarath Kumar, "Thermoelectric Superlattices for Waste Heat Recovery" Materials Research Society Meeting in Cancun, Mexico (August 16-18, 2015). Invited.

49. **H.N. Alshareef**, "Materials & Devices for Transparent Electronic Applications", presented at the Electrical Engineering Department at Khalifa University, Abu Dhabi, UAE (April 15, 2015). Invited.

50. **H.N. Alshareef, "**Nanomaterial Design Strategies for Supercapacitor Applications**",** presented at 3rd Saudi International Conference on Advanced Materials Technology, held on May 18 - 19, 2015 at King Abdulaziz City for Science and Technology (KACST) in Riyadh, Saudi Arabia. Invited.

51. Narendra Kurra, Bilal Ahmed, and **H.N. Alshareef**, "HfO_2 coated MoS_2 Nanosheets as High Capacity Anode for Sodium Ion Batteries: Mechanistic Insight into Capacity Retention", Material Research Society (MRS) Spring 2015 Meeting, April 8, 2015, Boston, MA, USA.

52. Narendra Kurra, Nagaraju Doddahali, and **H.N. Alshareef**, "V_2O_5 Nanostructures and Reduced Graphene Oxide as Electrodes for High Energy Density Asymmetric Supercapacitors", Material Research Society (MRS) Spring 2015 Meeting, April 9, 2015, Boston, MA, USA.

53. Zhenwei Wang and **H.N. Alshareef**, "Gate-bias stress stability improvement of TFTs using ZnO/HfO_2 multilayer channel structure", International Materials Research Congress (IMRC) 2015, Cancun,

Mexico 18 Aug 2015,

54. Zhenwei Wang and **H.N. Alshareef**, “Low temperature processed complementary metal oxide semiconductor (CMOS) device by oxidation effect from capping layer”, International Materials Research Congress (IMRC) 2015, Cancun, Mexico, 19 Aug 2015.

55. Chuan Xia and **H.N. Alshareef**, “Polyaniline-RuO_2 Core-Shell Nanostructured Arrays for Very Stable and High Performance Pseudocapacitors”, 66th Annual Meeting of the International Society of Electrochemistry in Taipei; 4-9 October 2015. Date of the talk: 6 Oct, 2015.

56. Qiu Jiang and **H.N. Alshareef**, “A general strategy for the fabrication of high performance microsupercapacitors”, 66th Annual Meeting of the International Society of Electrochemistry”, Taipei,Taiwan (October 4th 2015).

57. Zhenwei Wang and **H.N. Alshareef**, “Transparent all tin oxides based p-n diode thermometer”, International Materials Research Congress (IMRC) 2015, Cancun, Mexico, 19 Aug 2015.

58. Mrinal Hota, **H.N. Alshareef**, “Synaptic Memory Observed in bi-layer SnO Memristors” presented at International Material Research Congress (IMRC) 2015, Cancun, Mexico (16 - 20 August, 2015).

59. Nuha Alhebshi and **H.N. Alshareef**, “Microfabricated Pseudocapacitors Using Ni(OH)2 for on-Chip Energy Storage Applications”, The 2nd Edition of Nanotechnology Dubai International Conference and Exhibition (Nanotech Dubai, March 16 -18, 2015).

60. Nuha Alhebshi and **H.N. Alshareef**, “Flexible and Low-Cost Supercapacitors Based on Ni-Co-OH Nanoflakes and Graphene-Carbon Nanofibers, The Saudi Arabia Conference on Smart Grids and Sustainable Energy”, Jeddah, Saudi Arabia, December 7–9, 2015.

61. **H.N. Alshareef**, “Materials & Devices for Flexible and Transparent Electronic Platforms”, International Conference on Electronic Materials and Nanotechnology for Green Environment 2014, (November 20-22, 2014). Jeju, **KOREA.** Invited.

62. **H.N. Alshareef**,J.A. Carveo, M. A. Khan, “Flexible Memory Devices Based on Functional Polymers”, Smart Materials and Surfaces (SMS) Conference, Bangkok, **Thailand** (August 26-28, 2014). Invited.

63. **H.N. Alshareef**, “Thin Film and Nanowire Devices Based on p-Type Transparent Oxide Semiconductors”, International Conference on Nanomaterials & Technology (ICN+T), AVS sponsored meeting (July 21-25, 2014). Vail, Colorado, **USA**. Invited.

64. **H.N. Alshareef**, “Nanomaterial Designed Strategies for Capacitive Energy Storage Applications”, International Colloquium on Photovoltaic & Flexible Electronics (KAUST, November 2013). **Saudi Arabia.** Invited.

65. **H.N. Alshareef**, “Materials & Devices for Transparent Electronics”, CMOS Emerging Technologies Workshop, Grenoble, **FRANCE** (July 6-9, 2014). Invited.

66. **H.N. Alshareef** and J.A. Caraveo-Frescas, “SnO Based Thin Film and Nanowire Devices”, 10th International Thin-Film Transistor Conference (January 23-24, 2014). Delft, **Netherlands**. Invited.

67. **H.N. Alshareef**, “Nanomaterial for Energy Storage Applications”, TMS Annual Meeting, (February 16, 2014). San Diego, **USA**. Invited.

68. S.R. Sarath Kumar and **H.N. Alshareef**, “Nanostructured Oxide Thin Films & Superlattice Thermoelectrics”, IUMRS, (December, 2013). Chennai, **India**. Invited.

69. **H.N. Alshareef**, “High Performance Thin Film and Nanowire Devices Based on p-type Oxide

Semiconductors", Materials Research Society 2013 Fall Meeting (December 2, 2013). Boston, **USA**. Invited.

70. **H.N. Alshareef**, "Strategies for Improving the Performance of Thermoelectric Oxide Thin Films and Superlattices", 2013 Pacific Rim (PACRIM) Conference (June 2-7, 2013). San Diego, **USA.** Invited.

71. A.I.Abu-Taha, Sarath Kumar, and **H.N. Alshareef**, "Crystal orientation dependent thermoelectric properties of Al doped ZnO films", presented at the 32nd International Conference on Thermoelectrics, June 30 - July 4, 2013. Kobe, **Japan**. Invited.

72. **H.N. Alshareef**, "Future Directions in Materials Research", SABIC Annual Technology Workshop, May 21, 2013. (Riyadh, **Saudi Arabia**). Plenary.

73. **H.N. Alshareef**, "Nanostructured Electrodes for Efficient Supercapacitors", American Chemical Society Meeting (April 8, 2013). New Orleans, **USA**. Invited.

74. U. Bhansali and **H.N. Alshareef**, "All-Polymer, Flexible PEDOT-Based Single Polymer Resistive Memory Device", Presented at the Materials Research Society Spring Meeting (April 2, 2013)

75. H. Al-Jawhari, J.A. Caraveo-Frescas, and **H.N. Alshareef**, "Deposition and Characterization of P-type Cu_2O Thin Films & Devices", Fourth International Conference on Transparent Conductive Materials, October 17-23, 2012. **Greece**.

76. A.J. Alfonso-Frescas and **H.N. Alshareef**, "Fabrication of flexible p-type SnO thin film transistor", Fourth International Conference on Transparent Conductive Materials, October 17-23, 2012. **Greece**.

77. **H.N. Alshareef**, "All-Polymer Electronic Memory on Banknotes", High Security Printing Conference, **Dubai** September 26, 2012. Invited.

78. S. Sarath Kumar and **H.N. Alshareef**, "Thermoelectric Superlattices using NbO Interlayers", Materials Research Society 2012 Fall Meeting (November 25-December 2, 2012). Boston, **USA**.

79. Barasheed S.R. Sarath Kumar, and **H.N. Alshareef**, "Temperature dependent thermoelectric properties of zinc oxide and gallium doped zinc oxide thin films prepared by Sol-Gel processing", Materials Research Society 2012 Fall Meeting (November 25-December 2, 2012). Boston**, USA**.

80. Arash Mehdizadeh, Sriparna Bhattacharya, **H.N. Alshareef**, and T. Tritt, "Large Thermoelectric Power Factor in Pr-doped $SrTiO_3$ Ceramics", Materials Research Society 2012 Fall Meeting (November 25-December 2, 2012). Boston, **USA**.

81. **H.N. Alshareef** and Pradipta Nayak, "Effect of Plasma Treatment on the Performance of Ga-doped Zno (GIZO) Thin Film Transistors", Materials Research Society (MRS-IMRC) Meeting August 13-13 (2012) in Cancun, **Mexico**.

82. **H.N. Alshareef**, A. Khan, and U. Bhansali, "Polymer Electronics on Banknotes", Materials Research Society (MRS-IMRC) Meeting in Cancun, **Mexico** August 13-13 (2012)

83. A.J. Caraveo-Frescas and **H.N. Alshareef, "**High Mobility p-type SnO on Flexible Substrates", Materials Research Society (MRS-IMRC) Meeting in Cancun, **Mexico** August 13-13 (2012)

84. A.J. Caraveo-Frescas and **H.N. Alshareef**, "Experimental and Theoretical Investigation of the Effect of SiO2 Content in Gate Dielectrics on Flat-Band Voltage Shifts", presented at Materials Research Society (MRS-IMRC) Meeting in Cancun, **Mexico** August 13-13 (2012)

85. **H.N. Alshareef**, "High Performance Supercapacitors Using Nanostructured Oxides" International Meeting on Integrated Functionalities (ISIF)", June18-21, 2012, **Hong Kong**. Invited.

86. **H.N. Alshareef**, “Chemically Derived Nanostructured Oxides for Energy Storage Applications”, International Meeting on Applications of Ferroelectricity”, scheduled for July18-21, 2012, Aviero, **Portugal**. Invited.

87. Caraveo-Frescas and **H.N. Alshareef**, “Optimization of the sputter deposition conditions of Tin Monoxide”, presented at the European Materials Research Society (E-MRS) Meeting, May 14-18 (2012), in Strasbourg, **France**.

88. **H.N. Alshareef**, “Functional Oxides for Sustainable and Smart Living”, International Symposium on Micro and Nanotechnology, Sonora University, Hermosillo, **Mexico** (Feb 2, 2012). Invited.

89. W. Chen, R.B. Rakhi, and **H.N. Alshareef**, “Supercapacitors on Macroporous Sponge Electrodes”, Materials Research Society Spring Meeting San Francisco, April 9-15, (2012).

90. W. Chen, R.B. Rakhi, and **H.N. Alshareef**, “Graphene-Oxide Nanocomposite Electrodes for Energy Storage Applications”, Materials Research Society Spring Meeting, San Francisco, **USA**, April 9-15, (2012).

91. R.B. Rakhi, W. Chen, and **H.N. Alshareef**, “Conducting polymer/carbon Nanocoil composite electrodes for efficient supercapacitors”, oral presentation at the Materials Research Society Spring Meeting, San Francisco, **USA**, April 9-15, (2012).

92. R.B. Rakhi and **H.N. Alshareef**, “Ternary Graphene-CNT-MnO_2 Electrodes with Remarkable Pseudocapacitance ”, oral presentation at the Materials Research Society Spring Meeting, San Francisco, **USA**, April 9-15, (2012).

93. Unnat S. Bhansali, M.A. Khan, and **H.N. Alshareef**, “Inkjet Electrodes for Polymer Ferroelectric Memories on Flexible Substrates”, presented and the Flexible Electronics and Displays Conference”, Pheonix**, USA**, February 6-9(2012).

94. M. Dehkord, S. Bhattacharya, T. Tritt, and **H.N. Alshareef**, “Transport Properties of La-doped $SrTiO_3$ Thermoelectrics Prepared Using Spark Plasma Sintering”, presented at the American Physical Society Meeting, Boston, **USA**, February 27- March 2, 2012.

95. **H.N. Alshareef**, “Nanomaterials for Energy Storage Applications”, SABIC Energy Summit, Thuwal, **Saudi Arabia** (Jan. 22, 2011). Invited.

96. **H.N. Alshareef**, “Nanostructured Electrodes for High Performance Supercapacitor Applications”, invited Seminar at the KFUPM (Nov 15, 2011). **Saudi Arabia**. Invited.

97. **H.N. Alshareef**, “Ternary Electrode Composites for Electrochemical Energy Storage”, invited Seminar at UT Dallas, **USA**, (October 5, 2011). Invited.

98. **H.N. Alshareef**, “Ternary Electrode Composites for Electrochemical Energy Storage”, invited Seminar at the University of Northern Texas, Denton, **USA** (October 5, 2011). Invited.

99. **H.N. Alshareef**, “Nanostructured Electrodes for High Performance Supercapacitor Applications”, Nanomaterials for Energy Conference, University of Toronto (September 29, 2011), Toronto, **Canada**. Invited.

100. Caraveo-Frescas and **H.N. Alshareef**, “Oriented p-type SnO Thin Films Deposited by Reactive Sputter-Deposition”, presented at the Materials Research Society (MRS-IMRC) Meeting in Cancun, **Mexico** August 12 (2011).

101. Caraveo-Frescas and **H.N. Alshareef**, “Composition Dependent V_{FB} Tuning Using Rare Earth

Oxide Capping Layers", presented at the Materials Research Society (MRS-IMRC) Meeting in Cancun, **Mexico** August 13 (2011).

102. S. Kumar and **H.N. Alshareef**, "Thermoelectric Properties of Nb-Doped Thin Films", presented at the 30th International Meeting on Thermoelectricity (ICT 2011) in Traverse City, Michigan, **USA** July 17-21 (2011).

103. S. Kumar, and **H.N. Alshareef**, "Thermoelectric properties of single-phase $In_{0.2}Yb_{0.2}Co_4Sb_{12}$ thin films", presented at the 30th International Meeting on Thermoelectricity (ICT 2011) in Traverse City, Michigan, **USA**, July 17-21 (2011).

104. **H.N. Alshareef**, S. Kumar, A. Alyamani, and T. Tritt, "Thin Film Skutterudite Nanocomposites", presented at the Materials Research Society (MRS) 2010 Fall Meeting in Boston, **USA**, (November 28 -December 3, 2010).

105. **H.N. Alshareef**, "Polymeric Ferroelectric Memory Materials & Devices", presented at the IMRC-MRS 2010 Meeting in Cancun, Mexico (August, 16, 2010).

106. **H. N. Alshareef** and M. Alahmad, "Parametric Model for the Optimization of Energy Output of Piezoelectric Cantilevers", presented at ISIF 2010, San Juan, **Puerto Rico**, June 13-17, 2010.

107. Caraveo-Frescas and **H.N. Alshareef**, "Oriented p-type SnO Thin Films Deposited by Reactive Sputter-Deposition", presented at the Materials Research Society (MRS-IMRC) Meeting in Cancun, **Mexico** August 12 (2011).

108. Caraveo-Frescas and **H.N. Alshareef**, "Composition Dependent V_{FB} Tuning Using Rare Earth Oxide Capping Layers", presented at the Materials Research Society (MRS-IMRC) Meeting in Cancun, **Mexico** August 13 (2011).

109. S. Kumar and **H.N. Alshareef**, "Thermoelectric Properties of Nb-Doped Thin Films", presented at the 30th International Meeting on Thermoelectricity (ICT 2011) in Traverse City, Michigan, **USA**, July 17-21 (2011).

110. S. Kumar, and **H.N. Alshareef**, "Thermoelectric properties of single-phase $In_{0.2}Yb_{0.2}Co_4Sb_{12}$ thin films", presented at the 30th International Meeting on Thermoelectricity (ICT 2011) in Traverse City, Michigan, **USA**, July 17-21 (2011).

111. **H.N. Alshareef**, "Functional Oxides in Emerging Electronics", CMOS Emerging Technologies Conference, Whistler, BC, **Canada** (June 14-17, 2011). Invited.

112. **H.N. Alshareef**, S. Kumar, A. Alyamani, and T. Tritt, "Thin Film Skutterudite Nanocomposites", presented at the Materials Research Society (MRS) 2010 Fall Meeting in Boston, **USA** (November 28 -December 3, 2010).

113. **H.N. Alshareef**, "Micro-power Generation Using Unconventional Sources", The presented at Chemindix, The Applications of Nanotechnology in Energy Conference . **Bahrain**, October 18-22 (2010). Invited.

114. **H.N. Alshareef**, "Emerging Electronics & Energy Harvesting", presented at SAUDI ARAMCO (October, 2009). Dahran, **Saudi Arabia**. Invited.

115. Hinkle, J. Chambers, **H.N. Alshareef** et al., "Metal gate work function tuning by interface engineering", VLSI Technology Symposium 2010, **Hawaii** (June 2010).

116. **H. N. Alshareef**, "Polymeric Ferroelectric Memory Materials & Devices", presented at the IMRC-MRS 2010 Meeting in Cancun, **Mexico** (August, 16, 2010).

117. **H. N. Alshareef** and M. Alahmad, "Parametric Model for the Optimization of Energy Output of Piezoelectric Cantilevers", presented at ISIF 2010, San Juan **Puerto Rico**, June 13-17, 2010.

118. **H. N. Alshareef**, "Energy Harvesting from Vibrations", IEEE Local Chapter Meeting, Austin, Texas, **USA** (April 23, 2009). Invited.

119. M. Quevedo, A. Avendano, **H.N. Alshareef**, B. Gnade, Sameer Vengopal, and David Allee, presented at the Materials Research Society Meeting, San Francisco, **USA** (April, 13, 2009). Invited.

120. **H. N. Alshareef**, "Integrated Hybrid Flexible CMOS Devices and Circuits", presented at Stanford University, **USA**, April 11, 2009. Invited.

121. **H. N. Alshareef**, "Applications of Functional Oxides in Electronic and Energy Harvesting Devices", presented at Imperial College, **England**, August, 14, 2009. Invited.

122. **H.N. Alshareef** and B.E. Gnade, Fourth Annual Workshop on Energy Harvesting, Virgina Tech, Virginia, **USA**, January 28-29 (2009). Invited.

123. D.R. Allee, M.A. Quevedo-Lopez, S. Gowrisanker, A. E. Avendano-Bolivar, **H.N. Alshareef**, B. Gnade S. Venugopal, R. Krishna, K. Kaftanoglu "Flexible CMOS and Electrophoretic Displays" Invited Presentation, Society of Information Display International Symposium (2009). Pheonix, **USA**. Invited.

124. M. Quevedo, **H. N. Alshareef**, D. Allee, and B. Gnade, Electrochemical Society Meeting CS (October, 2009), Vienna, **Austria**. Invited.

125. A. Hande, Pradeep Shah,**H. N. Alshareef**, Bruce Gnade, "Integrated Energy Harvesting with Multisource, Adaptive Circuits & Interfaces", Fourth Annual Workshop on Energy Harvesting, Virginia tech, **USA** ،Jan 28-29 (2009). Invited.

126. S. Gowrisanker, M.A. Quevedo-Lopez, **H. N. Alshareef**, B. Gnade. S. Venugopal, R. Krishna, K. Kaftanoglu, D. Allee "Low Temperature Integration of Hybrid CMOS Devices on Plastic Substrates" Proceedings of the 2009 Flexible Electronics and Displays. (presented January, 2009 in Phoenix, **USA.**

127. **H.N. Alshareef**, "Energy Harvesting Through the Piezoelectric and Thermoelectric Effects", 2nd International Conference on Advanced materials, Monclova, **Mexico** (October, 2008). Invited.

128. **H.N. Alshareef**, "Energy Harvesting From Vibration" Invited talk at Sematech, Austin, Texas, **USA** (September, 2008). Invited.

129. **H.N. Alshareef**, "Metal Gate Electrode Options for Nano Scale Transistors" Invited talk at Applied Materials Santa Clara, CA, **USA** (April, 2008). Invited.

130. **H.N. Alshareef**, M. Alahmad, E. Fuentes, L. Baldenegro, M. Quevedo, B. E. Gnade, and "Estimation of The Piezoelectric Constant of $Pb(Zr,Ti)O_3$ Thin Films Using a Simple Capacitive Technique", presented at the Materials Research Society Meeting, Boston, **USA** (December 3, 2008).

131. L. Baldenegro, E. Fuentes, M. Quevedo, W. Debray, B. E. Gnade, and **H.N. Alshareef**, "Characterization of PZT Thin Films on Non-Conducting Surfaces for Energy Harvesting Applications ", presented at the Materials Research Society Meeting, Boston, **USA** (December 1, 2008).

132. **H.N. Alshareef**, "Energy Harvesting through the Piezoelectric Effect", presented at the University of Texas at Dallas, Dallas, Texas, **USA**, (April 18, 2008).

133. M.A. Quevedo, **H.N. Alshareef**, and B. Gnade, "Sensor Materials and Devices", presented at the Signal

Analysis Conference 2008, Pheonix, AZ, **USA** (March 13, 2008). Invited.

134. G. Srinivas, Y. Ai, M. A. Quevedo, **H.N. Alshareef**, E.Vogel, and B.E. Gnade, "Thickness Effects in Pentacene Organic Thin Film Transistors", presented at US Display Conference (USDC), Tucson, AZ, **USA** (Jan. 2008).

135. G. Srinivas, Y. Ai, M. A. Quevedo, **H.N. Alshareef**, and B.E. Gnade, "Time Dependent Dielectric Breakdown in Parylene Thin Films", presented at MRS Spring Meeting, March 23-28, 2008 (San Francisco, CA, **USA**).

136. **H.N. Alshareef**, "Flexible Electronics: Materials and Devices", presented at the International Conference on Advanced Materials, Monclova, **Mexico** (September 27, 2007). Invited.

137. H.C. Wen, S.C. Song, C.S. Park, C. Burham, G. Burseker, M. Quevedo, K. Chio, and **H.N. Alshareef**, "Metal-Al-Nitride Gate Electrodes for 32 nm CMOS Applications", presented at the 2007 VLSI Technology Symposium, 160 (2007).

138. **H.N. Alshareef**, "Metal Gates for CMOS Applications", presented at the University of Texas at Dallas, Dallas, **USA** (April, 2006). Invited.

139. **H.N. Alshareef,** H.R. Harlan, H.C. Wen**,** P. Majhi, H.F. Luan, K. Choi, B.H. Lee, R. Jammy, "Thermally Stable N-Metal Gate MOSFETs Using La-Incorporated HfSiO Dielectric" presented at the VLSI Technology Symposium, Honolulu, **Hawai**, (June 10, 2006).

140. H. R.Harris, **H. N. Alshareef**, H.C. Wen, S. Krishnan, K. Choi, H. Luan, D. Heh, C.S. Park, H.B. Park, M. Hussain, B.S. Ju, P.D. Kirsch, S.C. Song, P. Majhi, B.H. Lee, R. Jammy **"**Simplified Manufacturable Band Edge Metal Gate Solution for NMOS Without a Capping Layer"**,** presented at the International Electron Device Meeting, **Washington**, DC (December, 2006).

141. H. Harris, S. Krishnan, H. C. Wen, **H. N. Alshareef**, A. Rao, L. Solis, P. Majhi, R. Choi, B. H. Lee, G. Bersuker, and G. A. Brown, "Reliability Characteristics of Metal/High-? PMOS with Top Interface Engineered Band Offset Dielectric (BOD)," presented at the IEEE International Reliability Physics Symposium, Florida, **USA** (2006).

142. M. El Bouanani, V. Ukirde and **H. N. Alshareef**, "Cu diffusion in CH_4 plasma irradiated Tantalum nitride", presented at CAARI 2006:19th International Conference on the Application of Accelerators in Research and Industry, Ft Worth TX, **USA** (August 21-25**)** 2006**.**

143. P. Kirsch, M. A. Quevedo-Lopez, S. A. Krishnan, C. Krug, **H. Alshareef**, C. S. Park, R. Harris, N. Moumen, A. Neugroschel, G. Bersuker, B .H. Lee, J.G. Wang, G. Pant1, B. E. Gnade, M. J. Kim, R. M. Wallace, J. S. Jur, D. J. Lichtenwalner, A. I. Kingon, and R. Jammy. "Band Edge n-MOSFETs with High-k/Metal Gate Stacks Scaled to EOT=0.9nm with Excellent Carrier Mobility and High Temperature Stability", presented at the International Electron Device Meeting, Washington, DC, **USA** (December, 2006).

144. H.C. Wen, K. Choi, C. S. Park, H. Luan, **H. N. Alshareef**, H. R. Harris H.B. Park, G. Bersuker, P. Lysaght, P. Majhi, S.C. Song and B.H. Lee, "Fermi-level pinning and threshold voltage roll-off phenomena at low effective oxide thicknesses for p-MOS work function metal gates" presented at the 3rd International Symposium on Advanced Gate Stack Technology, Austin, Texas, **USA** (September 27-29, 2006).

145. M. M. Hussain, S. -. Song, C. Y. Kang, M. A.Quevedo-Lopez, **H. N. Alshareef**, B. Sassman, R. Choi and B. H. Lee, "Compatibility of ALD Hafnium Silicate with Dual Metal Gate CMOS Integration", presented at the 2006 Solid State Device Meeting in Yokohama, **Japan** (2006).

146. M. A. Quevedo-Lopez, P.D. Kirsch, S. Krishnan, **H. N. Alshareef**, J. Barnett, H. R. Harris,

A.Neugroschel, F.S. Aguirre-Tostado, B. E. Gnade, M. J. Kim, R. M. Wallace, and B.H. Lee, "Systematic Gate Stack Optimization to Maximize Mobility with HfSiON EOT Scaling", presented at the 36th European Solid-State Device research Conference, Montreaux, **Switzerland**, September 18-22, 2006.

147. **H. N. Alshareef**, K. Choi, H. C. Wen, H. Harris, H. Luan, P. Lysaght, P. Majhi, and B. H. Lee, "Gate Work Function Modification Using Ultra-Thin Metal Interlayers", presented at the 207th Electrochemical Society Meeting, Quebec, **Canada** (September, 2005).

148. K. Choi, Y. Senzaki, H. Luan, **H. N. Alshareef**, H. Harris, H. Wen, C. Park, P. Majhi, and B. H. Lee, "N-type band edge work function demonstration employing plasma-enhanced ALD HfSiN gate electrodes on high-k dielectrics," presented at AVS 5th International Conference on Atomic Layer Deposition, San Jose, California, **USA**, 2005.

149. **H.N. Alshareef**, "IC Fabrication Tutorial", presented at the 2nd International Conference on Novel Materials and Devices, Saltillo Institute of Technology, Saltillo, **Mexico** (April, 2005). Invited.

150. **H.N. Alshareef**, "Composition and Temperature Dependence of the TaAlN Metal Gate Work Function", presented at the Semiconductor Interface Specialist Conference (SISC), Washington, DC, **USA** (December, 2005).

151. **H.N. Alshareef,** "Work Function Exraction Using a Terraced Oxide Technique", presented at 2nd International Workshop on Advanced Gate Stack Technology, in Austin, TX, **USA** (September 28-30, 2005). Invited.

152. **H.N. Alshareef**, "Status of Metal Gate Material Development for CMOS Applications", presented at Philips Research, Grenoble, **France**, (September, 2005). Invited.

153. **H.N. Alshareef**, "Status of Metal Gate Material Development for CMOS Applications", presented at Infineon technology, Dressden, **Germany** (September, 2005). Invited.

154. **H.N. Alshareef** and P. Majhi, "Atomic Layer Deposition of TaN Metal Gate Electrodes", presented at the 2005 International Conference on Atomic Layer Deposition, Helsinki, **Finland** (July, 2005)

155. Y. Senzaki, J. Gutt, G. A. Brown, P. Kirsch, **H. N. Alshareef**, K. Choi, C. Huffman, H. Wen, P. Majhi, B. H. Lee, H. Chatham, S. Park, and S. Lanee, "ALD of Advanced High-k and Metal Gate Stacks for MOS Devices," presented at 207th ECS Meeting, Quebec, **Canada**, 2005.

156. D. Rogers, T. Laaksonen, A. Varghese, C. Otten, M. Kasner, **H. N. Alshareef**, M. Bevan, "In-Line Control and Rapid Process Development of Nitrided Gate Oxides" , presented at the CHARACTERIZATION AND METROLOGY FOR ULSI TECHNOLOGY 2005, Dallas, Texas (2005).

157. S. C. Song, B. Lee, Z. Zhang, K. Choi, S. H. Bae, **H.N. Alshareef**, P. Majhi, H. Wen, J. Bennett, B. Sassman, and P. Zeitzoff, "Comparision of MOSFET Characteristics Between ALD and MOCVD TiN Metal Gate on Hf Silicate," presented at the 207th Meeting of the Electrochemical Society, Quebec, Canada (September, 2005).

158. H. R. Harris, H. C. Wen, K. Choi, **H.N. Alshareef**, H. Luan, Y. Senzaki, C. D. Young, S. C. Song, Z. Zhang, G. Bersuker, P. Majhi, and B. H. Lee, "Demonstration of high performance transistors with PVD metal gate," presented at the European Solid-State Device Research Conference, Switzerland, 2005.

159. K. Choi, Y. Senzaki, H. Luan, **H. N. Alshareef**, H. Harris**,** H. Wen, C. Park, P. Majhi, and B. H. Lee, "N-type band edge work function demonstration employing plasma-enhanced ALD HfSiN gate electrodes on high-k dielectrics," presented at AVS 5th International Conference on Atomic Layer Deposition, San Jose, California, 2005.

160. H. C. Wen, K. Choi, P. Lysaght, P. Majhi, **H. N. Alshareef**, C. Huffman, R. Harris, H. Luan, B. H. Lee, N. Yamada, and S. Wickramanayaka, "Work function engineering of RuHf alloys as gate electrodes for future generation dual metal CMOS," presented at the Taiwan VLSI Technology Symposium, Taipei, Taiwan (2005).

161. K. Choi, Y. Senzaki, H. Luan, **H. N. Alshareef**, H. Harris**,** H. Wen, C. Park, P. Majhi, and B. H. Lee, "N-type band edge work function demonstration employing plasma-enhanced ALD HfSiN gate electrodes on high-k dielectrics," presented at AVS 5th International Conference on Atomic Layer Deposition, San Jose, California, (2005).

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163. Z. Zhang, S.C. Song, C. Huffman, J. Barnett, N. Moumen, **H.N. Alshareef**, P. Majhi, M. Hussain, M. Akbar, J.Sim, S. Bae, B. Sassman, and B.H. Lee, "Integration of Dual Metal gate CMOS Using TaSiN and Ru Metal Gates", presented at the 2005 VLSI Technology Symposium, Japan (2005).

164. P. S. Lysaght, H.-C. Wen, **H. N. Alshareef**, K. Choi, R. Harris, H. Luan, Y. Senzaki, G. Lian, M. Campin, M. Clark, B. Foran, P. Majhi, and B.-H. Lee, "Physical Characterization of Novel Metal Electrodes for Hf-based Transistors," presented at the CHARACTERIZATION AND METROLOGY FOR ULSI TECHNOLOGY 2005 Conference, Dallas, TX (September 9, 2005).

165. P. Majhi, H. C. Wen, **H. N. Alshareef**, K. Choi, R. Harris, P. Lysaght, H. Luan, Y. Senzaki, S. C. Song, B. H. Lee, and C. Ramiller, "Evaluation and integration of metal gate electrodes for future generation dual metal CMOS," presented at the IEEE International Conference on Integrated Circuit Technology, Shanghai, China (2005).

166. K. Choi, H.-C. Wen, **H. N. Alshareef**, R. Harris, P. Lysaght, H. Luan, P. Majhi, and B. H. Lee, "The effect of metal thickness, overlayer and high-k surface treatment on the effective work function of metal electrode," presented at the European Solid-State Device Research Conference, (2005).

167. K. Choi, P. Lysaght, H.-C. Wen, K. Matthews, **H. N. Alshareef**, C. Huffman, R. Harris, H. Luan, P. Majhi, and B. H. Lee, "Growth mechanism of ALD-TiN and the thickness dependence of work function," presented at the Taiwan VLSI Technology Symposium, Taipei, Taiwan (2005).

168. H. C. Wen, **H. N. Alshareef**, H. Luan, K. Choi, P. Lysaght, H. R. Harris, C. Huffman, G. A. Brown, G. Bersuker, P. Zeitzoff, H. Huff, P. Majhi, and B. H. Lee, "Systematic investigation of amorphous transition-metal-silicon-nitride electrodes for metal gate CMOS applications," presented at the VLSI Technology Symposium in Japan, (2005).

169. P. Majhi, H.C. Wen, **H. N. Alshareef**, K. Choi, H.F. Luan, and B.H. Lee, presented at the Taiwan VLSI Technology Symposium, Taipei, Taiwan (2005).

170. **H. N. Alshareef**, K. Choi, H.C. Wen, R. Harris, H.F. Luan, M. Quevedo-Lopez, P.Majhi, and B.H. Lee, "Process-Induced Work Function Modulations of $Ta_xAl_{1-x}N_y$ Metal Gate Electrodes", presented at the 2005 IEEE Semiconductor Interface Specialist (SISC) Conference, Washington DC (December, 2005).

171. **H. N. Alshareef**, "Current Challenges in Front-End Processes in CMOS Device Fabrication", presented at the Universidad de Coahuila, Saltillo, Coahuila, Mexico (Nov 12, 2004).

172. **H. N. Alshareef**, T.Y. Lou, A. Karamcheti, V.H.C Watt, G.A. Brown, M.D. Jackson, H.R. Huff, B. Evans, and D.L. Kwong, "High Performance NMOS Devices Using Ultra-thin VHP Oxynitride", presented at the 2000 Solid State Device Meeting in Sendai, Japan (September, 2000).

173. T.Y. Lou, **H. N. Alshareef**, G.A. Brown, M. Laughery, V.H.C. Watt, A. Karamcheti, M.D. Jackson, and H.R. Huff, "Prospective Technology for System-on-a-Chip: N_2 Implant Followed by VHP O_2 Re-Oxidation", presented at the SPIE Meeting, California (2000).

174. **H. N. Alshareef**, T.Y. Luo, A. Karamcheti, G.A. Brown, M. Laughery, V. Watt, M.D. Jackson, H.R. Huff, K. Ahmad, R. Jallepally, D. Noble, N. Tam, and G. Miner, "Gate Dielectrics Formed by Remote Plasma Nitridation of In-Situ Steam Generated (ISSG) Oxides" presented at the the 198th Electrochemical Society Meeting,Toronto, Canada (October, 2000).

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Research Society, Boston,

LIST of PATENTS

Pending

- Composition & Methods of Making Metal-Organic Frameworks with Redox-Active Centers, PCT Application No. PCT/IB2017/058522.
- “Ligning Laser Lithography for Microsupercapacitors with Green Lift-off Process”, Provisional filed October 2017
- A self-powered photodetector - supercapacitor systems (Disclosure Number: 17T&I0065)
- “Two-Dimensional Transition Metal Oxide & Semiconducting Polymer Hybris with Electroactivty and Photosensitivity”
- “Thin Film Electronics using one Binary Oxide for all Transistor layers”, full application filed May 2017
- “On-chip graphene electrode, methods of making, and methods of use”, Application Number: WO 2018015884 A1.
- “Non-volatile ferroelectric memory cells with multilevel operation”, US Application number US20170249983A1
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- “MXene based ternary compoite for Sensing Applications”, provisional filed
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- Large-scale Synthesis of 2D Semiconductors by Epitaxial Phase Conversion Process, Provisional Filed (Application Serial # Application serial no. 62/620,021)

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No.	US Patent #	Issued Patent Title
1	9,976,913	Thermal History Devices, Systems and Methods for Thermal History Detection, US Patent
2	9,305,706	Fractional order capacitor
3	8,994,014	Ferroelectric devices, interconnects, and methods of manufacture thereof
4	8,878,341	Graphene-based composite materials, method of manufacture and applications thereof
5	8,802,519	Work function adjustment with the implant of lanthanides
6	8,304,333	Method of forming a high-k gate dielectric layer
7	8,008,216	Nitrogen profile in high-K dielectrics using ultrathin disposable capping layers
8	7,906,441	System and method for mitigating oxide growth in a gate dielectric
9	7,858,459	Work function adjustment with the implant of lanthanides
10	7,807,522	Lanthanide series metal implant to control work function of metal gate electrodes
11	7,799,669	Method of forming a high-k gate dielectric layer
12	7,682,988	Thermal treatment of nitrided oxide to improve negative bias thermal instability
13	7,582,521	Dual metal gates for mugfet device
14	7,514,308	CMOS device having different amounts of nitrogen in the NMOS gate dielectric layers and PMOS gate dielectric layers
15	7,410,911	Method for stabilizing high pressure oxidation of a semiconductor device
16	7,402,524	Post high voltage gate oxide pattern high-vacuum outgas surface treatment
17	7,345,001	Gate dielectric having a flat nitrogen profile and method of manufacture therefor
18	7,339,240	Dual-gate integrated circuit semiconductor device
19	7,332,433	Methods of modulating the work functions of film layers
20	7,282,457	Apparatus for stabilizing high pressure oxidation of a semiconductor device
21	7,226,826	Semiconductor device having multiple work functions and method of manufacture therefor
22	7,206,215	Antifuse having tantalum oxynitride film and method for making same
23	7,176,079	Method of fabricating a semiconductor device with a wet oxidation with steam process
24	7,087,440	Monitoring of nitrided oxide gate dielectrics by determination of a wet etch
25	7,064,052	Method of processing a transistor gate dielectric film with stem
26	7,049,242	Post high voltage gate dielectric pattern plasma surface treatment
27	7,038,265	Capacitor having tantalum oxynitride film and method for making same
28	7,022,623	Method of fabricating a semiconductor device with a dielectric film using a wet oxidation with steam process
29	7,018,925	Post high voltage gate oxide pattern high-vacuum outgas surface treatment
30	6,955,996	Method for stabilizing high pressure oxidation of a semiconductor device
31	6,949,477	Method of fabricating a capacitive element for a semiconductor device
32	6,943,392	Capacitors having a capacitor dielectric layer comprising a metal oxide having multiple different metals bonded with oxygen
33	6,924,239	Method for removal of hydrocarbon contamination on gate oxide prior to non-thermal nitridation using "spike" radical oxidation
34	6,921,703	System and method for mitigating oxide growth in a gate dielectric
35	6,872,639	Fabrication of semiconductor devices with transition metal boride films as diffusion barriers
36	6,864,527	Capacitor having tantalum oxynitride film and method for making same
37	6,773,981	Methods of forming capacitors
38	6,737,696	DRAM capacitor formulation using a double-sided electrode
39	6,730,566	Method for non-thermally nitrided gate formation for high voltage devices
40	6,720,607	Method for improving the resistance degradation of thin film capacitors
41	6,673,689	Double layer electrode and barrier system on hemispherical grain silicon
42	6,614,082	Fabrication of semiconductor devices with transition metal boride films as diffusion barriers
43	6,613,654	Fabrication of semiconductor devices with transition metal boride films as diffusion barriers
44	6,610,211	Method of processing internal surfaces of a chemical vapor deposition reactor
45	6,596,651	Method for stabilizing high pressure oxidation of a semiconductor device
46	6,518,121	Boride electrodes and barriers for cell dielectrics
47	6,458,645	Capacitor having tantalum oxynitride film and method for making same
48	6,451,661	DRAM capacitor formulation using a double-sided electrode
49	6,423,649	Method and apparatus for stabilizing high pressure oxidation of a semiconductor device
50	6,400,552	Capacitor with conductively doped Si-Ge alloy electrode
51	6,399,459	Double layer electrode and barrier system on hemispherical grain silicon for use with high dielectric constant materials
52	6,351,005	Integrated capacitor incorporating high K dielectric
53	6,316,800	Boride electrodes and barriers for cell dielectrics
54	6,291,364	Method and apparatus for stabilizing high pressure oxidation of a semiconductor device
55	6,258,655	Method for improving the resistance degradation of thin film capacitors
56	6,255,186	Methods of forming integrated circuitry and capacitors having a capacitor electrode
57	6,239,459	Capacitors, methods of forming capacitors and integrated circuitry
58	6,191,443	Capacitors, methods of forming capacitors, and DRAM memory cells
59	6,162,744	Method of forming capacitors having high-K oxygen containing capacitor dielectric layers,
60	6,124,164	Method of making integrated capacitor incorporating high K dielectric
61	6,111,285	Boride electrodes and barriers for cell dielectrics
62	6,096,127	Tuneable dielectric films having low electrical losses
63	6,082,375	Method of processing internal surfaces of a chemical vapor deposition reactor
64	5,555,486	Hybrid metal/metal oxide electrodes for ferroelectric capacitors