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Engineering & Scientific Consulting

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Professional Profile

Dr. Hu's area of expertise is product safety evaluation and failure analysis of electrical and electronic systems. She has worked extensively on technical investigations in the following fields: automotive electronic systems, including hardware level and system level evaluations; consumer products, including circuit design reviews and prototype validation testing; and energy storage systems, including risk assessments and design failure mode analyses.

Dr. Hu has also assisted clients with technology landscaping review regarding technical standards, regulatory requirements and pre-certification preparation for the US, Canada and European market. In addition, she is experienced with design of experiments, surface characterization, and electrical and magneto-transport measurements in the semiconductor physics domain.

Before joining Exponent, Dr. Hu was a senior scientist at Halliburton where she worked on developing gamma ray sensing instruments for oil and gas exploration and well integrity intervention using scintillation detectors. She is also an inventor of oil field technology with nine US patents issued.

As a graduate research assistant at the Georgia Institute of Technology, Dr. Hu performed fundamental research in graphene physics and demonstrated the quantum phenomenon in graphene based electronics. She worked on understanding the growth mechanism and improved the growth process to achieve high quality graphene thin film obtained through thermal sublimation of silicon carbide in an induction furnace. She mastered laboratory skills in surface analysis (AFM, SEM, XPS, Raman, Ellipsometer, LEED), nanodevice fabrication (E-beam lithography, RIE, ICP, E-BEAM evaporation, carbon coater, ALD), and electrical and magnetotransport measurements (Lock-in amplifier, cryogenic measurements, Hall effect measurements, and resistivity measurements).

Academic Credentials & Professional Honors

Ph.D., Physics, Georgia Institute of Technology (Georgia Tech), 2013

B.S., Physics, Tsinghua University, 2007

Prior Experience

Senior Scientist, Halliburton, 2013-2017

Intern, Schlumberger, May-August 2012

Graduate Research Assistant, Epitaxial Graphene Lab, Georgia Institute of Technology, 2008-2013

Professional Affiliations

Institute of Electrical and Electronics Engineers – IEEE (member)

IEEE Product Safety Engineering Society Virtual Chapter – Chair

National Fire Protection Association—NFPA (member)

Languages

Mandarin Chinese

Patents

US 10551523 Evaluating and imaging volumetric void space location for cement evaluation

US 10459112, Determining a characteristic of a material surrounding a wellbore based on count rates of scattered photons

US 10393917, Cement evaluation with X-ray tomography

US 10288749, Photon collimation apparatus, methods, and systems

US 10281593, Energy detection apparatus, methods, and systems

US 10209395, Formation independent cement evaluation with active gamma ray detection

US 10126433, Energy detection apparatus, methods, and systems

US 10067261 Downhole photon radiation detection using scintillating fibers

US 9951614 Behind pipe evaluation using a nuclear density tool

Publications

Kunc J, Hu Y, Palmer J, Guo Z, Hankinson J, Gamal S, Berger C, de Heer W, Planar edge Schottky barrier-tunneling transistors using epitaxial graphene/SiC junctions, Nano Letters 2014, 14, 5170.

Palmer J, Kunc J, Hu Y, Hankinson J, Guo Z, Berger C, de Heer W, Controlled epitaxial graphene growth within removable amorphous carbon corrals, Applied Physics Letters 2014, 105, 023106.

Sherpa S, Kunc J, Hu Y, Levitin G, de Heer W, Berger C, Hess D, 2014, Local work function measurements of plasma-fluorinated epitaxial graphene, Applied Physics Letters 104, 081607.

Dong R, Guo Z, Palmer J, Hu Y, Ruan M, Hankinson J, Kunc J, Bhattacharya S, Berger C, deHeer W, Wafer bonding solution to epitaxial graphene-silicon integration, Journal of Physics D: Applied Physics 2014, 47, 094001.

Kunc J, Hu Y, Palmer J, Berger C, de Heer W, A method to extract pure Raman spectrum of epitaxial graphene on SiC, Applied Physics Letter 2013, 103, 201911.

Guo Z, Dong R, Chakraborty P, Lourenco N, Palmer J, Hu Y, Ruan M, Hankinson J, Kunc J, Cressler J, Berger C, de Heer W, Record Maximum Oscillation Frequency in C-face Epitaxial Graphene transistors, Nano Letters 2013, 13, 942.

Ruan M, Hu Y, Guo Z, Dong R, Palmer J, Hankinson J, Berger C, de Heer W, Epitaxial graphene on silicon carbide: introduction to structured graphene, MRS Bulletin 2012, 37, 1146.

Hu Y, Ruan M, Guo Z, Dong R, Palmer J, Hankinson J, Berger C, de Heer W, Structured epitaxial graphene growth, Journal of Physics D: Applied Physics 2012, 45, 154010.

Kim S, Zhou S, Hu Y, Acik M, Chabal Y, Berger C, de Heer W, Bongiorno A, Riedo E, Room Temperature Metastability of Multilayer Graphene Oxide Films, Nature Materials 2012, 11, 544.

Wu X, Hu Y, Ruan M, Madiomanana N, Berger C, de Heer W, Thermoelectric effect in high mobility single layer epitaxial graphene, Applied Physics Letters 2011, 99, 133102.

de Heer W, Berger C, Ruan M, Sprinkle M, Li X, Hu Y, Zhang B, Hankinson J, Conrad E, Large area and structured epitaxial graphene produced by confinement controlled sublimation of silicon carbide, Proceeding of National Academy of Sciences 2011, 108 (41) 16900.

Song YJ, Otte A, Kuk Y, Hu Y, Torrance D, First P, de Heer W, Min H, Adam S, Stiles M, MacDonald A, Stroscio J, High-resolution tunnelling spectroscopy of a graphene quartet, Nature 2010, 467, 185.

Wei Z, Wang D, Kim S, Kim SY, Hu Y, Yakes M, Laracuenta R, Dai Z, Marder S, Berger C, King W, de Heer W, Sheehan P, Riedo E, Nanoscale tunable reduction of graphene oxide for graphene electronics, Science 2010, 328, 1373.

Sprinkle M, Ruan M, Hu Y, Rubio-Roy M, Hankinson J, Wu X, Berger C, de Heer W, Scalable Templated growth of graphene nanoribbons on SiC, Nature Nanotechnology 2010, 5, 727.

de Heer W, Berger C, Wu X, Sprinkle M, Hu Y, Ruan M, Stroscio J, First P, Haddon R, Piot B, Faugeras C, Potemski M, Moon JS, Epitaxial Graphene Electronic Structure And Transport, Journal of Physics D: Applied Physics 2010, 43, 374007.

Rubio-Roy M, Zaman F, Hu Y, Berger C, Moseley M, Meindl J, de Heer W, Structured epitaxial graphene growth on SiC by selective graphitization using a patterned AlN cap, Applied Physics Letters 2010, 96, 082112.

Wu X, Hu Y, Ruan M, Madiomanana N, Hankinson J, Sprinkle M, Berger C, de Heer W, Half integer quantum Hall effect in high mobility single layer epitaxial graphene, Applied Physics Letters 2009, 95, 223108.

Li X, Wu X, Sprinkle M, Ming F, Ruan M, Hu Y, Berger C, de Heer W, Top and side gated epitaxial graphene field effect transistors, Physica Status Solidi (a) 2009, 207, 286.

Sprinkle M, Siegel D, Hu Y, Hicks J, Soukiassian P, Tejeda A, Taleb-Ibrahimi A, Le F`evre P, Bertran F, Berger C, de Heer W, Lanzara A, Conrad E, First direct observation of a nearly ideal graphene band structure, Physical Review Letters 2009, 103, 226803.

Conference Presentations

Hu Y, Functional Safety For E-Motorcycles: How the New Edition of ISO 26262 Applies to Electric Bikes, IDTechEx Show 2019, Santa Clara, CA, November 2019

Hu Y, Applying Functional Safety in the Battery System for Electric and Autonomous Vehicles, 2019 IEEE International Symposium on Product Compliance Engineering (ISPCE 2019), San Jose, CA, May 2019

Hu Y, Guo W, Behind Casing Inspection Using Active Gamma-Gamma Technique, Offshore Technology

Conference Asia, Kuala Lumpur, Malaysia, 2016.

Hu Y, Guo W, A Focused-Sensitivity Cement Evaluation Method Using X-Ray/Gamma Ray Spectra, 13th International Conference on Inorganic Scintillators and Their Applications, Berkeley, CA, 2015.

Hu Y, Guo Z, Ruan M, Hankinson J, Palmer J, Zhang B, Dong R, Kunc J, Berger C, deheer W, High Mobility Single Layer Epitaxial Graphene on 4H-SiC, American Physical Society March Meeting, Boston, MA, 2012.