Exponent®
Engineering & Scientific Consulting

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Professional Profile

Dr. Hu is a highly skilled professional with expertise in automotive failure investigations, consumer product safety evaluation and electronic devices failure analysis. With a proven track record of supporting clients across diverse industries, Dr. Hu excels in identifying root causes of failures and developing validated remedies. Her approach involves warranty analysis, field return inspection, supplier data review, and recreation testing to enhance product reliability and support client decision-making.

In consumer product design review and safety evaluation, Dr. Hu evaluates design documents and prototype devices to identify potential safety risks. She performs failure analysis and assists clients in responding to regulatory authorities, ensuring compliance and product safety. Dr. Hu's utilization of ISO 9001 principles, coupled with her product domain expertise, enables her to routinely perform manufacturing factory evaluations. She assesses assembly processes for battery packs, PCBA, and product assembly lines, aiding clients in vendor selection and identifying potential weaknesses in manufacturing quality systems.

In addition, Dr. Hu supports legal teams on matters related to electric vehicle fires, advanced driver assistance systems, and regulatory compliance. She conducts reviews on various types of automotive component qualification testing and assists in regulatory and standards review processes for different market entry requirements. With extensive experience as a fire investigator, Dr. Hu specializes in electrical devices and battery fires. She conducts thorough fire scene investigations and evaluates battery-powered device protection systems, ensuring effective mitigation of risks and enhancing safety measures.

Before joining Exponent, Dr. Hu was a senior scientist at Halliburton where she worked on developing sensors for oil and gas exploration. She is also an inventor of oil field technology with more than ten US patents issued. As a graduate research assistant at the Georgia Institute of Technology, Dr. Hu performed fundamental research in graphene physics and worked on understanding the growth mechanism to achieve high quality graphene on silicon carbide.

Academic Credentials & Professional Honors

Ph.D., Physics, Georgia Institute of Technology, 2013

B.S., Physics, Tsinghua University, 2007

Licenses and Certifications

Certified Fire and Explosion Investigator (CFEI)

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Certified ISO 9001:2000 Lead Auditor

exida Functional Safety Practitioner

Prior Experience

Senior Scientist, Halliburton, 2013-2017

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

Professional Affiliations

Institute of Electrical and Electronics Engineers – IEEE (Senior member)

National Fire Protection Association—NFPA (member)

Publications

Book Chapters

Hu, Y, Wang, X, Computer Engineering Applications in Electronic, Biomedical, and Automotive Systems, Chapter 4, pp 117-146, Nova Science Publisher, 2024

Selected Conference Presentations

Hu, Y, SNEC 8th (2023) International Energy Storage Technology, Equipment and Application Conference & Exhibition, November 2023

Hu, Y, Arora, A, Printed Circuit Boards in Power Converter Applications: Design Considerations and Failure Mechanisms, IEEE Energy Conversion and Energy Expo (ECCE), October 2021 (Tutorial)

Hu, Y, Safety of Li-ion Battery Energy Storage System in the Electric Vehicle Charging Station SPI, ESI & North America Smart Energy Week, October, 2020

Hu, Y, Hazard Analysis and Risk Assessment for Li-ion battery Energy Storage Systems, ESA Energy Storage Annual Conference & Expo, August 2020

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), San Jose, CA, May 2019

Selected Peer Reviewed Journals

Junc 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.

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.

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, Laracuente 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.

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.

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.