

SAMPATH VANIMISETTI

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Profile Summary:

Senior engineering professional with over 15 years of experience in technology development, program execution and people leadership roles in various functions within the organization ranging from R&D, Advanced Vehicle Development to customer-facing Product Launch Execution.

Core Competencies in Strategic Technology Areas:

- **New Vehicle Technologies:**
 - Vehicle Dynamics and Chassis Controls XIL Development
 - Autonomous and Advanced Driver Assist Systems in Electric & Hybrid Vehicles
 - Electric Vehicle Propulsion and Advanced Battery Technology
- **Technology Enablers:**
 - Model-based Systems Engineering of Complex Cyber-physical Systems
 - Lightweighting techniques for Electric Vehicle body structures
 - Safety & Robustness Improvement using Multi-disciplinary Design Optimization

Software Skills:

CAE & MDO: Abaqus, LS-DYNA, Adams, NASTRAN, Optistruct, GENESIS, Isight
MBSE: CarSim, Carmaker, Amesim, GTPower, Matlab/C/C++, QTronics Silver, FMI, AUTOSAR, Python, Tensorflow, Unreal/Unity3D, OpenCV

Academics & Certifications:

[May 2001] B.E. (Hons.) Mechanical Engineering [First Class with CGPA 7.49/10.0]
Institute: Birla Institute of Technology & Science, Pilani (INDIA)

[December 2004] M.S. Mechanical Engineering [First Class with CGPA 6.7/8.0]
Institute: Indian Institute of Science, Bangalore (INDIA)

[April 2016] Machine Learning
Institute: Stanford University

[November 2016] Power Electronics
Institute: University of Colorado Boulder

[May 2017] Robotics for Mobility
Institute: University of Pennsylvania

[August 2017] Self-driving Car Nanodegree with Specialization in Functional Safety
Institute: Udacity

[June 2018] Architecture and Systems Engineering Program Certification
Institute: Massachusetts Institute of Technology xPRO

[February 2020] MicroMasters in Emerging Automotive Technologies
Institute: Chalmers University of Technology

Work Experience:

Organization, Job Location	From Date	To Date	Job Title & Responsibility
GE Global Research, Bangalore, India	12/27/2004	12/21/2007	Research Engineer (Engineered Materials) <ul style="list-style-type: none"> Execute corporate R&D projects on engineered materials for different internal stakeholder such as GE Plastics, GE Aviation and GE Energy. Oversee material test and lab operations and coordinate with partner labs. Developed new technology for processing engineered thermoplastic materials.
Global General Motors R&D, Bengaluru, India	12/24/2007	06/30/2012	Senior Researcher (Automotive Materials) <ul style="list-style-type: none"> Execute corporate R&D projects on advanced automotive materials for application in lightweighting and electrification. Developed degradation models for Li-ion battery electrode materials in collaboration with external national labs and universities. Create intellectual property and enable commercialization (9 USPTO patent granted).
General Motors Tech Center, Bengaluru, India	12/05/2011	3/31/2015	Sr. Technical Lead (Advanced Vehicle Development) <ul style="list-style-type: none"> Develop advanced CAE and multi-disciplinary design optimization techniques to balance mass, NVH, safety and vehicle dynamics performance. Partner with stakeholders in GM North America, Europe and GM Korea to execute MDO on global small car and mid-sized sedan programs.
	4/01/2015	8/30/2018	Sr. Engineering Manager (Vehicle Integration) <ul style="list-style-type: none"> Responsible for India regional execution for Vehicle Dynamics and N&V performance Managed two teams of about 15 engineers Coordinate verification of vehicle and component technical specs, overall vehicle quality refinement, and regulatory compliance. Technical investigation lead for low-speed autonomous driver assist project supported.
General Motors Tech Center, Warren, USA	9/20/2017	03/20/2018	International Technical Assignment Personnel (Advanced Vehicle Development & Integration) <ul style="list-style-type: none"> Integration Engineer for Electric Urban Mobility Assess performance of new urban mobility design concepts and provide feedback to creative design team for early-stage fast learning cycles. Program Management for advanced development of MY23 BEV ETRS column-shifter. Coordinate supplier development, sourcing timing and clinic plan with internal stakeholders in Advanced Design, SMT and AVDC.
General Motors Tech Center, Warren, USA	9/1/2018	Present	Senior Controls Integration Simulation Engineer (Vehicle Dynamics and Chassis Controls VDDV) <ul style="list-style-type: none"> Support Chassis Controls XIL development for autonomous & active safety systems Strategic thrust area leader for MBSE and SDM capability enhancement for XIL-based product development for new electric architectures.

Awards & Recognitions:

1. A.F. Davis Silver Medal Award from AWS (2015)
2. CAE Innovation Award, GM Technical Center (2014)
3. Charles L. McCuen Award Nomination at Global General Motors R&D (2011)
4. DFSS Black Belt (2013), TRIZ Level-1 (2012)
5. Languages: Japanese N5 (2010), German A1 (2009)

List of Intellectual Property Awards & Patents Granted:

- a. *A tool method to support CAE design of GFRP/CFRP composite materials for crash*, GM Internal Tool Method Invention Award, 17 May 2012.
- b. *Roller hemming with in-situ adhesive curing* (SK Vanimisetti, R Raghavan, J Carsley); US#8341992 Issued on Jan 1, 2013.
- c. *Composite manufacture* (SK Vanimisetti, DR Sigler); US#8481170 Issued on July 9, 2013.
- d. *Mitigation of mechanical degradation in Li battery materials using biconcave particles* (SK Vanimisetti, N Ramakrishnan); US#8679680 Issued on March 25, 2014.
- e. *Welding electrode and method of forming a resistance spot weld* (SK Vanimisetti, DR Sigler); US#8785807 Issued on Jul 22, 2014.
- f. *Fade-resistant high capacity electrode for a Lithium-ion battery* (MW Verbrugge, SK Vanimisetti, N Ramakrishnan); US#9012075, Issued April 21, 2015.
- g. *Divisional: *Fade-resistant high capacity electrode for a Lithium-ion battery** (MW Verbrugge, SK Vanimisetti, N Ramakrishnan); US#9012075, Issued August 25, 2015.
- h. *A method and apparatus to mitigate the bond-line read-out defect in adhesive-bonded composite panels* (SK Vanimisetti, CS Wang); US#9328266, Issued May 3, 2016.
- i. *A method for mitigating cure shrinkage in HT thermosetting adhesives and SMC* (SK Vanimisetti, CS Wang, VR Buravalla); US#9561621, Issued February 7, 2017.
- j. *Divisional: *Welding electrode and method of forming a resistance spot weld** (SK Vanimisetti, DR Sigler); US#9662738, Issued May 30, 2017.

List of GM Internal Publications:

1. **S.K. Vanimisetti**, D.R. Sigler; The effect of microstructural modification and notch root geometry on fatigue performance of AHSS spot welds. 2013. MSR-414.
2. **S.K. Vanimisetti**, B. Patham, E.J. Berger, H. Kia, D. Yu; Synthesis Design & Analysis Systems - An optimal approach for identification of material model parameters for composites CAE. 2012. ISL-676/CML-162.
3. **S.K. Vanimisetti**, D.R. Sigler; Microstructural modification in AHSS spot welds to improve high cycle fatigue performance. 2012. ISL-703/MSR-404.
4. **S.K. Vanimisetti**, C.S. Wang; Investigation of adhesive bond line read-out in SMC joints - Part 2: Finite Element Modeling. 2011. ISL-614/CML-115.
5. **S.K. Vanimisetti**, C. Kwag, C.S. Wang; Investigation of adhesive bond line read-out in SMC joints - Part 1: Materials Characterization. 2011. ISL-607/CML-107.
6. **S.K. Vanimisetti**, D.R. Sigler; HAZ geometry in advanced high strength steel spot welds and its effect on fatigue performance. 2011. ISL-600/MSR-369.
7. **S.K. Vanimisetti**, N. Ramakrishnan; A finite element model for studying diffusion induced mechanics in battery electrode materials. 2011. ISL-601.
8. **S.K. Vanimisetti**, N. Ramakrishnan; Effect of shape and aspect ratio of electrode particles on mechanical degradation of li-ion battery material. 2010. ISL-495.
9. **S.K. Vanimisetti**, D.R. Sigler; Effect of process-induced weld cracks on fatigue life of AHSS resistance spot welds. 2010. ISL-506/MSR-345.
10. **S.K. Vanimisetti**, B. Patham, H.G. Kia, K. Wang; Comparison of LS-DYNA composite damage models: numerical stability & computation time. 2010. ISL-513/CML-061.
11. **S.K. Vanimisetti**, S.K. Basu; Study of thermal cure cycle induced distortions in adhesively bonded mixed-material joints. 2009. ISL-400.

12. B. Patham, **S.K. Vanimisetti**, E.J. Berger; A systematic and inexpensive approach for identification of material model parameters for composites CAE: verification of applicability for layup variations. 2013. ISL-726/CMS-194.
13. M.M. Joglekar, N. Ramakrishnan, S. Inguva, **S.K. Vanimisetti**, R.B. Moulliet; Cycle Life Analysis of LG Chem P1.4 cell using Porous Composite Electrode - Degradation Model (PCE-DM ver 2). 2012. ISL-708.
14. A.S. Prakash, K. Ramesha, S. Chenrayan, **S.K. Vanimisetti**, N. Ramakrishnan, R. Raghavan; The effect of shape electrode particle on cyclic capacity fade of Li-ion battery materials: An experimental study. 2012. CL-12-119-ISL.
15. N. Ramakrishnan, M. Joglekar, **S.K. Vanimisetti**; Study of cyclic degradation of Li ion electrode material using porous composite electrode framework. 2011. ISL-625.
16. S.K. Basu, **S.K. Vanimisetti**, Kwag, C., C.S. Wang; Measurement and prediction of surface distortion BLRO of adhesive bonded SMC panels. 2009. ISL-330/MPL-703.
17. **S.K. Vanimisetti**, N. Ramakrishnan, A.M. Kumar; Effect of electrode particle shape on diffusion induced mechanical degradation. R&D STLC Fall 2009 Kettering Forum.
18. D.R. Sigler, **S.K. Vanimisetti**; HAZ geometry in AHSS spot welds and its effect on fatigue performance. R&D SLTC 2011 Spring Kettering Forum.

List of External Publications:

a. General Articles

- B. Patham, K.B. Deshpande, **S.K. Vanimisetti**, [Manager's Guide to Productivity Gains with Multiphysics Simulation](#), COMSOL Inc, August 2010
- B. Patham, K.B. Deshpande, **S.K. Vanimisetti**, [Modeling Continually Improves Advanced Materials for Automobiles](#), COMSOL News, December 2009

b. Scientific Publications

- **S.K. Vanimisetti**, D.R. Sigler (2014) [Microstructural modification in AHSS spot welds to improve high cycle fatigue performance](#), *The AWS Journal*, **93**, pp. 153s-161s, May 2014.
- **S.K. Vanimisetti**, C. Kwag, C.S. Wang (2014) Investigation of adhesive bond-line read-out in SMC joints, submitted to *Polymer Engineering and Science*.
- M.M. Joglekar, N. Ramakrishnan, S. Inguva, **S.K. Vanimisetti**, R. Moulliet (2012) [Numerical implementation of porous composite electrode degradation model to study the cycle life of Li-ion cell](#), *Int. J. Comp. Mat. Sci. Eng.* **02**, 1350012.
- **S.K. Vanimisetti**, N. Ramakrishnan (2012) [A Finite Element Study of Diffusion-Induced Mechanics in Li-ion Battery Electrode Materials](#), *Int. J. Comp. Mat. Sci. Eng.* **01**, 1250028.
- **S.K. Vanimisetti**, N. Ramakrishnan (2011) [Effect of the electrode particle shape in Li-ion battery on the mechanical degradation during charge-discharge cycling](#), *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, **226** (9), pp. 2192-2213.
- **S.K. Vanimisetti**, R. Narasimhan (2007) [A numerical analysis of flexure induced cylindrical cracks during indentation of thin hard films on soft substrates](#), *Thin Solid Films*, **515** (6), pp. 3277-3282.
- **S.K. Vanimisetti**, R. Narasimhan (2006) [A numerical analysis of spherical indentation response of thin hard films on soft substrates](#), *International Journal of Solids and Structures*, **43** (20), pp. 6180-6193.

c. Conferences and Presentations

- D.R. Sigler, **S.K. Vanimisetti**, Microstructural Modification Effects on Fatigue Performance of AHSS Spot Welds, at *The AWS SMWC XVI*, October 22 - 24, 2014, Livonia, Michigan.
- B. Patham, **S. K. Vanimisetti**, and X. Huang, Multi-scale Modeling of Residual Stress Development in CFR Thermoset Composites, at *POLYCON 2014*, Apr. 2014, Mysore, India.
- B. Patham, **S. K. Vanimisetti**, Composites Processing and Process Modeling: A Few Perspectives from the Automotive Industry, IIT Bombay, Dec. 2013, Mumbai, India

- D.R. Sigler, **S.K. Vanimisetti**, HAZ geometry in advanced high strength steel spot welds, at *The AWS SMWC XV*, October 2 - 5, 2012, Livonia, Michigan.
- N. Ramakrishnan, M.M. Joglekar, A. Chakraborty, **S.K. Vanimisetti** and A.S. Prakash, A Phenomenological Model for Cyclic Degradation of Li ion Cell Materials, *6th Asian Conference on Electrochemical Power Sources*, Jan 5-8, 2012, Chennai.
- N. Ramakrishnan, M.M. Joglekar, **S.K. Vanimisetti**, K. Jagannathan, A. Chakraborty, Challenges in Battery Life Prediction and Ageing of Li ion Cell Materials, *Symposium on Modeling and Simulation Challenges in the Design and Development of Future Vehicles, India Science Lab, Global GM R&D*, November 14, 2011, Bangalore.
- T. Han, K. Jagannathan, N. Ramakrishnan, Y. Qi, **S.K. Vanimisetti**, M. Verbrugge, From atoms to autos: mathematical modeling across length scales for the design and integration of traction batteries, *Advanced Automotive Battery Conference 2011*, Pasadena, CA, USA.
- M. Verbrugge, N. Ramakrishnan, **S.K. Vanimisetti**, On the Durability of Lithium Ion Cells, *9th International Symposium on Advances in Electrochemical Sciences and Technology*, December 2-4, 2010, Chennai, India.
- **S.K. Vanimisetti**, A numerical analysis of flexure induced cracks during indentation of thin hard films on soft substrates, *2005 TMS Annual Symposium*, Feb 2005, San Francisco.
- **S.K. Vanimisetti**, Finite element analysis of deformation and fracture of thin hard films on soft substrates subjected to indentation, *8th In-house Symposium at the Dept. of Mech. Engg.*, Nov 2003, IISc Bangalore.