Jobin Kolliyil Joy, Ph.D.

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Research Interests

Mechanics of Materials: Micromechanics; Structural Mechanics; Stochastic and Probabilistic Mechanics; Multiscale and Nonlinear Material Behavior; Crystal Plasticity; Mechanics of Energy Materials; Radiation and Creep Effects in Structural Materials.
Materials Science and Engineering: Shape Memory Alloys; Composites and Active Materials; Modeling Materials Processing.
Computational and Data-Driven Methods: Computational Materials Science and Machine Learning; Computational Mechanics; Data-Driven Methods; Bayesian Experimental Design.

Academic Biography

As a researcher and engineer with a focus on computational solid mechanics, I develop multiscale modeling frameworks that integrate micromechanics, physics-informed machine learning, and uncertainty quantification to predict the behavior of advanced structural materials. My academic training in Aerospace Engineering, combined with research experience at Texas A&M University, Los Alamos National Laboratory, and R&D in the structural analysis software industry, has equipped me to address interdisciplinary challenges spanning aerospace, energy, and manufacturing applications. I am also dedicated to research-informed teaching and inclusive mentorship that prepares the next generation of engineers and scientists.

Education

08/15 – 05/22 **Ph.D., Texas A&M University (TAMU)** in Aerospace Engineering.
Specialization: Materials & Structures
Thesis title: *Micromechanical modeling of precipitated NiTiHf shape memory alloys.*
Thesis Advisor: Prof. Dimitris Lagoudas
CGPA: 3.9/4.00

08/13 – 05/15 **M.E., Indian Institute of Science (IISc)** in Aerospace Engineering.
Thesis title: *Computational Modeling of Resin Flow during Composite Manufacturing Process using VAM.*
Thesis Advisor: Prof. Dineshkumar Harursampath
CGPA 6.6/8.00

08/09 – 06/13 **BTech, Indian Institute of Technology Madras (IITM)** in Aerospace Engineering.
Project report: *Thermal Management of IIT Madras Student Satellite.*
Advisors: Prof. S. Santhakumar, Prof. C. Balaji
CGPA 8.1/10.00

Employment History

03/26 – **Research & Development Head, Ark2Tech, India**
Leading a team of engineers in the development of FEA-based software for structural analysis of pressure vessels and pipelines. Designed a modular architecture encompassing computational solvers and a user-facing GUI; established testing and validation protocols to ensure numerical accuracy and software reliability. Employs LLM-assisted development workflows for accelerated coding and documentation cycles.

Employment History (continued)

05/23 – 01/26 **Postdoctoral Researcher at Los Alamos National Laboratory (LANL), USA**
Group: *Materials Science in Radiation and Dynamics Extremes*
Mentor: *Dr. Laurent Capolungo*
Conducted research on high-temperature behavior of steel alloys to predict structural reliability, including creep performance in conventionally and additively manufactured steels. Developed a Bayesian framework for failure prediction with uncertainty quantification. Authored technical reports, published peer-reviewed papers, and managed multiple concurrent project deadlines. Contributed to successful research proposals in materials modeling and reliability.

06/22 – 04/23 **Postdoctoral Researcher at Texas A&M University, USA**
Group: *Shape Memory Alloy Research Team*
Mentor: *Prof. Dimitris Lagoudas*
Collaborated on a NASA-funded project demonstrating a hypersonic morphing design and developed machine learning models to support morphing control strategies. Mentored graduate students in micromechanics and computational modeling. Contributed to proposal development and conducted preliminary research for future funding proposals. Organized a workshop on machine learning techniques for graduate students.

06/15 – 05/22 **Graduate Researcher at Texas A&M University, USA**
Group: *Shape Memory Alloy Research Team*
Mentor: *Prof. Dimitris Lagoudas*
Conducted research on micromechanics-based constitutive modeling to predict structure–property relationships in precipitate-strengthened high-temperature shape memory alloys (SMAs). Developed machine learning models to establish microstructure–behavior linkages and to predict SMA response under complex loading paths. Formulated statistical approaches with integrated uncertainty quantification to enhance micromechanical modeling fidelity. Contributed to proposal development and writing for external funding opportunities. Mentored undergraduate students through structured summer research programs.

06/15 – 06/16 **Engineering and Math Tutor** *at The Traditions at Northgate, College Station, USA*
Served as a part-time volunteer tutor in engineering, physics, and mathematics at the Academic Success Center, where academic guidance and support was provided to undergraduate students from Texas A&M University and Baylor College.

05/12 – 06/12 **Summer Internship** *at Aeronautical Development Establishment (ADE), Bangalore*
Mentor: *Rakesh Kumar, N. Balachandran*
Conducted preliminary thermal modeling of an Unmanned Aerial Vehicle (UAV). Performed CFD-based thermal analysis using ANSYS Fluent and developed a multi-node heat transfer model in MATLAB, which predicted temperatures within 10% accuracy of the Fluent results.

Contributions

Material & Structural Integrity

- Modeled creep behavior in advanced steels using a crystal plasticity framework. Developed a methodology to estimate creep rupture life from minimal experimental data, improving efficiency in high-temperature materials design. LANL
- Investigated the structure–property relationships in SMAs by analyzing the microstructural effects of aging heat treatments on phase transformation. Enabled tailored material design by linking microstructure features to functional behavior through micromechanical models. TAMU

Contributions (continued)

Computational Modeling

- Developed a full-field finite element-based micromechanical modeling framework to simulate microstructure evolution, and resulting phase transformations in precipitation-hardened NiTiHf SMAs. Incorporated 3D TEM-based RVE reconstructions and implemented FFT-based solvers to improve simulation efficiency and scalability. **TAMU**
- Created a computational model to simulate the solidification process in composite manufacturing, enabling better control of material microstructure during processing. **IISc**
- Developed a numerical solver for contact mechanics in functionally graded materials. Designed and evaluated a passive thermal control system for *iitmsat* using lumped and FEA modeling using COMSOL. Conducted thermal analysis and cooling design for electronic in a UAV fuselage using multinodal analysis and validated through CFD simulations in ANSYS FLUENT. **IITM**

Data-Driven Methods

- Applied machine learning to predict SMA behavior using simulation and experimental data. Developed models for microstructures with/without precipitates and for anisotropic single crystals, incorporating dimensionality reduction (2-point statistics + PCA) and trained neural networks for fast predictions. **TAMU**
- Used an artificial neural network–genetic algorithm (ANN–GA) approach to optimize thermal design parameters for *iitmsat*, enhancing performance under mission-specific orbital conditions. **IITM**

Uncertainty Quantification

- Developed a Bayesian framework for predicting long-term creep rupture from short-term data, integrating uncertainty quantification for reliability analysis. **LANL**
- Proposed a perturbation-theory-based statistical formulation to quantify dispersion in micromechanical simulations. This enabled ensemble property predictions and informed decisions on RVE size for accuracy–efficiency trade-offs. **TAMU**

List of Projects

- **eXtremeMAT Computational Materials Discovery for Existing & Advanced Power Cycles**
  US Department of Energy project with Dr. Laurent Capolungo [10/23-12/25] **LANL**
  Developed simple prediction tool for rapid creep life prediction of metallic materials. Proposed experimental design framework for rapid qualification of materials for creep life.
- **Mechanistic Modeling and Aging in LPBF 316 SS**
  US Department of Energy project with Dr. Laurent Capolungo for Advanced Materials and Manufacturing Technologies (AMMT) program [04/24-12/25] **LANL**
  Evaluated the behavior of additively manufactured 316H stainless steel using crystal plasticity based mechanistic model. The effect of cell structures and precipitate distribution in the 316H alloys were studied. Developed a tool to generate complex microstructures for modeling of AM materials.
- **Creep Rupture Life Assessment in FeCrAl Alloys**
  US Department of Energy project with Dr. Laurent Capolungo [03/24-04/24] **LANL**
  Performed creep rupture life assessments of FeCrAl alloys intended for next-generation nuclear fuel reactors. Analyzed and predicted the creep rupture life for different FeCrAl alloy compositions to evaluate their long-term high-temperature performance and structural reliability.

List of Projects (continued)

- **On the Mechanistic Modeling of Dynamic Strain Aging and the Modeling of Creep Rupture from Strain Rate Sensitivity**
  US Department of Energy project with Dr. Laurent Capolungo for Nuclear Energy University Program (NEUP) [08/23-11/23] LANL
  Analyzed strain rate sensitivity and developed creep rupture models for advanced steel alloys as part of the DOE Advanced Fuels Campaign. Proposed a novel power-law framework for rapid creep life prediction. Developed a Bayesian calibration methodology integrating nano-indentation strain rate jump test data to enhance creep life assessments.
- **M2MSLA05-01-071: Mesoscale Modeling of the Mechanical Response of Gr91: Predicting Radiation Effects**
  US Department of Energy project with Dr. Laurent Capolungo [07/23-09/23] LANL
  Analyzed the creep behavior of Gr91 ferritic-martensitic steel under high-temperature service conditions using crystal plasticity-based micromechanical models. Investigated the impact of radiation-induced microstructural features—such as dislocation loops—on creep performance to support predictive modeling in nuclear environments.
- **M3MS-23LA0201015: Provide Initial Mapping of the Effect of Precipitate Densities and Sizes on Creep Rate**
  US Department of Energy project with Dr. L Capolungo & Dr. AK Mariyappan [05/23-08/23] LANL
  Investigated the high-temperature creep behavior of FeCrAl steel alloys for advanced nuclear applications. Studied the influence of precipitate size and density on creep behavior using crystal plasticity modeling approaches. Insights contributed to optimizing alloy microstructures for enhanced long-term performance.
- **Adaptive Aerostructures for Revolutionary Civil Supersonic Transportation**
  NASA University Leadership Initiative [2021–2022] TAMU
  Designed and implemented a machine learning model to control shape memory alloy (SMA) hysteresis actuators. Integrated the model into a morphing aerostructure system to predict and manage internal stress and actuator behavior under complex thermo-mechanical loading conditions.
- **Accelerating the development of phase transforming heterogeneous materials: application to high temperature shape memory alloys**
  National Science Foundation's (NSF) Designing Materials to Revolutionize and Engineer our Future (DMREF) program [2015–2019] TAMU
  Worked with a multidisciplinary team of faculty, postdocs, and graduate students in an effort to explore high temperature SMAs. Developed Bayesian Optimal Experimental Design for efficiently discovering targeted SMAs.
- **Statistical quantification of dispersion in micromechanical modeling predictions**
  Research project with Prof. Dimitris Lagoudas and Prof. Amine Benzerga [2018–2020] TAMU
  Developed a new statistical-based formulation to quantify the uncertainty in micromechanical modeling using representative volumes.
- **Contact mechanics of functionally graded material (FGM) coated surfaces**
  Research project with Prof. HSN Murthy [2013–2017] IITM
  Developed a new numerical method to solve the 2D contact behavior of a rigid indenter in contact with an FGM coated surface.
- **Modeling the resin flow in composite manufacturing process using VAM based formulation**
  Research project with Prof. Dineshkumar Harursampath [2014–2015] IISc
  Applied Variational Asymptotic Method (VAM), a powerful mathematical tool in structural analysis, for the first time in process modeling.
- **Thermal designing of IIT Madras student satellite: iitmsat**
  A student lead initiative to build a nano-satellite [2011–2013] IITM
  Developed the preliminary thermal design for iitmsat considering the requirements from other subsystems.

Skills

Research Experience	Extensive experience in computational solid mechanics, micromechanics, and FEA-based software development for structural analysis. Skilled in physics-based simulation, data-driven modeling, and developing computational tools with validated accuracy.
Analytical Skills	Proficient in uncertainty quantification, algorithm development, proposal writing, and conducting collaborative, interdisciplinary research with a strong emphasis on model validation and predictive accuracy.
Programming Languages	MATLAB, Python, C, Fortran; developed FEA solvers, custom computational mechanics tools, and machine learning models for materials analysis; experienced in LLM-assisted development workflows.
Engineering Software	ABAQUS, ANSYS, COMSOL, Pro-E, SolidWorks, CATIA, ANSYS FLUENT; applied in computational mechanics, design, and simulation tasks.
Professional Skills	Strong mentoring and teaching experience, excellent written and verbal communication, effective collaboration across research teams, and demonstrated leadership in managing academic and technical projects.

Courses & Expertise

- **Structural & Solid Mechanics:** Strength of Materials, Advanced Strength of Materials, Structural Mechanics, Aerospace Structural Mechanics, Fracture Mechanics, Contact Mechanics and Tribology, Continuum Mechanics, Theories of Modern Plate Structures, Engineering Design
- **Computational Mechanics & Simulation:** Finite Elements in Solid Mechanics, Nonlinear Finite Element Methods, Variational Methods and Structural Optimization, Nonlinear Mechanics of Composite Structures, Modal Analysis: Theory and Applications, Design & Optimization of Energy Systems, Crystal Plasticity, Computational Fluid Mechanics
- **Composites and Active Materials:** Micromechanics, Analysis & Design of Composite Structures, Active Materials
- **Materials & Manufacturing:** Materials Science, Reactor Steels, Additive Manufactured steels, Space Applications
- **Aerospace & Flight Mechanics:** Flight Vehicle Structures, Flight and Space Mechanics, Spacecraft Dynamics, Flight Vehicle Design
- **Fluids & Thermal Sciences:** Fluid Mechanics, Theory of Fluid Mechanics, Heat Transfer
- **Data-Driven Methods & Experimental Design:** Design of Experiments, Data Science, Uncertainty Quantification, Experimental Techniques, Engineering Mechanics

Professional and Academic Activities

Citation Metrics

- **223** total citations; **h-index: 5**; **i10-index: 4** (Google Scholar, March 2026).

Academic Service

- Authored two chapters in the academic book *Shape Memory Alloys: Materials, Modeling, and Design* (Springer).
- Peer Reviewer at International Journal of Plasticity, 2024–present. Reviewed 20+ manuscripts.
- Peer Reviewer at Shape Memory and Superelasticity, 2023.
- Session Chair, Session: Advancing Multi-scale Modeling Capabilities in Metal Additive MFG through Machine Learning, Society of Engineering Science Annual Technical Meeting, College Station, TX, 2022.

Professional and Academic Activities (continued)

Teaching Experience

- Organized and taught a machine learning workshop for graduate students at Aerospace Department, Texas A&M University, 2022.
- Taught undergraduate students on micromechanical modeling of Shape Memory Alloys through structured summer research programs.
- Served as a part-time volunteer tutor in engineering, physics, and mathematics at the Academic Success Center, College Station, TX, 2016.
- Volunteer, National Service Scheme (NSS) as part of which developed teaching and web content for high school students, 2009-2010.

Awards

- AERO Graduate Excellence Fellowship, Texas A&M University, 2021.
- Secured an All-India Rank of 4 in the GATE entrance examination for Aerospace Engineering, 2013.
- Placed in top 0.5% of 400,000 students in national level IIT Joint Entrance Exam, 2009

Extracurricular Activities

- Won short film contest at 12th Five Year Plan Hackathon held at IIT Madras, event hosted by planning commission of India, 2013.
- Winner of the event 'Project X' in Mechanica 2010 at IIT Madras, annual technical festival of Mechanical department.
- Coordinator, Shaastra Ambience, which coordinated the design infrastructure for the annual technical festival of IIT Madras, 2010.
- Volunteer, Saarang Lectures and Demonstrations, which coordinated the lectures in the annual cultural festival of IIT Madras, 2010.

Research Publications

Journal Articles

1. **Jobin K Joy**, Haghgouyan, B., Karakalas, A. A., Vasoya, M. & Lagoudas, D. C. A neural network model for shape memory alloy actuation response with physical constraints for partial phase transformation. *Journal of Intelligent Material Systems and Structures* **36,** 875–893 (2025).
2. Minh-Tam Hoang **, Jobin Joy**, E. *et al.* An accelerated framework for predicting creep rupture lifetimes in engineering alloys. *Materials & Design,* 115308 (2025).
3. **Jobin K. Joy**, Chaugule, P. S., le Graverend, J.-B. & Lagoudas, D. C. A crystal-plasticity-informed Gaussian Process Regression model to capture anisotropy in single crystal shape memory alloys. *Computational Materials Science* **240,** 112990 (2024).
4. **Jobin K. Joy** *et al.* Rapid assessment of the creep rupture life of metals: A model enabling experimental design. *International Journal of Plasticity,* 104133 (2024).
5. **Jobin K. Joy**, Cruzado, A., Solomou, A., Benzerga, A. & Lagoudas, D. C. Computational Homogenization of Precipitated Shape Memory Alloys: A Comparative Study of FFT Versus FEA. *Shape Memory and Superelasticity,* 1–15 (2022).
6. **Jobin K. Joy** *et al.* Effects of microstructure and composition on constitutive response of high temperature shape memory alloys: Micromechanical modeling using 3-D reconstructions with experimental validation. *Acta Materialia* **232,** 117929 (2022).

7. Solomou, A. *et al.* Multi-objective Bayesian materials discovery: Application on the discovery of precipitation strengthened NiTi shape memory alloys through micromechanical modeling. *Materials & Design* **160,** 810–827 (2018).

8. **Jobin K. Joy**, Abhilash, M. & Murthy, H. A simplified analysis of 2D sliding frictional contact between rigid indenters and FGM coated substrates. *Tribology International* **108,** 174–185 (2017).

Conference Articles

1. **Jobin K. Joy** *et al. Experimental and Numerical Characterization of High Temperature Deformation Behavior of 347H Stainless Steel* in *Advances in Materials Technology for Power Plants* **84871** (2024), 99–110.

2. Tian, H., **Jobin K. Joy** & Lagoudas, D. *A Data-Driven Approach With Physics-Based Constraints for Modeling Partial Reorientation Response of Magnetic Shape Memory Alloys* in *AIAA SCITECH 2024 Forum* (2024), 0027.

3. **Jobin K. Joy**, Cruzado, A., Solomou, A., Benzerga, A. A. & Lagoudas, D. C. *Representative volume size in micromechanical modeling of precipitated SMAs* in *Smart Structures and NDE for Energy Systems and Industry 4.0* **10973** (2019), 76–85.

4. **Jobin K. Joy**, Solomou, A., Baxevanis, T., Karaman, I. & Lagoudas, D. C. *Micromechanical modeling of precipitation hardened NiTiHf* in *Materials Science Forum* **915** (2018), 147–156.

5. **Jobin K. Joy**, Solomou, A., Baxevanis, T. & Lagoudas, D. C. *Constitutive response of precipitation hardened Ni-Ti-Hf shape memory alloys through micromechanical modeling* in *Active and Passive Smart Structures and Integrated Systems XII* **10595** (2018), 591–599.

6. **Jobin K. Joy**, Solomou, A., Baxevanis, T. & Lagoudas, D. C. *Predicting the constitutive response of precipitation hardened NiTiHf* in *Behavior and Mechanics of Multifunctional Materials and Composites 2017* **10165** (2017), 97–105.

Technical Reports

1. Dang, K., **Jobin K. Joy** & Capolungo, L. *M3MT-25LA0903033: Quantify the low and high temperature creep response of 316H as a function of microstructure* tech. rep. (Prepared for U.S. Department of Energy, Sept. 2025).

2. **Jobin K. Joy**, Rovinelli, A. & Capolungo, L. *Mechanistic Modeling and Aging in LPBF 316 SS* tech. rep. (Prepared for U.S. Department of Energy, Sept. 2024).

3. **Jobin K. Joy** *et al. Creep Rupture Life Assessment in FeCrAl Alloys* tech. rep. (Prepared for U.S. Department of Energy Advanced Fuels Campaign, Apr. 2024).

4. Capolungo, L., **Jobin K. Joy** & Mariyappan, A. K. *M3MS-23LA0201015: Provide initial mapping of the effect of precipitate densities and sizes on creep rate* tech. rep. (Prepared for U.S. Department of Energy, Aug. 2023).

5. **Jobin K. Joy**, Rovinelli, A., Kohnert, A. A. & Capolungo, L. *M2MSLA05-01-071: Mesoscale modeling of the mechanical response of Gr91: predicting radiation effects* tech. rep. (Prepared for U.S. Department of Energy, Sept. 2023).

6. **Jobin K. Joy** *et al. On the mechanistic modeling of dynamic strain aging and the modeling of creep rupture from strain rate sensitivity* tech. rep. (Prepared for U.S. Department of Energy, Nov. 2023).

7. **Jobin K. Joy**, Kumar, S., Bilare, S. A. K. & Kumar, R. *Thermal analysis of the electronic packages housed inside the fuselage of a MALE UAV configuration* tech. rep. (Prepared for IITM Aerospace Dept., June 2012).

8. **Jobin K. Joy**. *iitmsat Phase A Thermal Control System report* tech. rep. (Prepared for iitmsat, Dec. 2011).

Dissertation

1. **Jobin K. Joy**. *Micromechanical modeling of precipitated NiTiHf shape memory alloys* : PhD Dissertation (2022).
2. **Jobin K. Joy**. *Computational Modeling of Resin Flow during Composite Manufacturing Process using VAM* : ME Thesis (2015).
3. **Jobin K. Joy**. *Thermal Management of IIT Madras Student Satellite* : final year project report (2013).

Conference Presentations

1. Capolungo, L., **Jobin K. Joy**, Talapatra, A., Rovinelli, A. & Lebensohn, R. *On the Competition Between Solute and Precipitate Strengthening: Effects on Creep Strength* Conference presentation at the Minerals, Metals & Materials Society (TMS) Annual Meeting and Exhibition, Las Vegas. Mar. 2025.
2. Hoang, M.-T. *et al. Accelerated Evaluation of Creep Behavior in Nuclear Reactor Structural Alloys* Conference presentation at the Minerals, Metals & Materials Society (TMS) Annual Meeting and Exhibition, Las Vegas. Mar. 2025.
3. Mara, N. *et al. Property Mapping and Creep Behavior of Advanced Nuclear Reactor Alloys Via Nanoindentation* Conference presentation at the Minerals, Metals & Materials Society (TMS) Annual Meeting and Exhibition, Las Vegas. Mar. 2025.
4. Rovinelli, A., **Jobin K. Joy**, Talapatra, A. & Capolungo, L. *Predicting the Variability in Performance of Zircaloy in Nuclear Reactors* Conference presentation at the Minerals, Metals & Materials Society (TMS) Annual Meeting and Exhibition, Las Vegas. Mar. 2025.
5. **Jobin K. Joy**, Talapatra, A. A. & Capolungo, L. *Microstructure-sensitive Modeling of Grade-91 Alloy with Uncertainty Quantification* Conference presentation at the Minerals, Metals & Materials Society (TMS) Annual Meeting and Exhibition, Florida. Mar. 2024.
6. Mara, N. A. *et al. High throughput Assessment of Creep Behavior of Advanced Nuclear Reactor Alloys by Nanoindentation* Conference presentation at the Engineering Conferences International conference, Italy. Oct. 2024.
7. **Jobin K. Joy** & Lagoudas, D. *Stress Prediction in SMA Torque Tube Actuator using Data-Based Machine Learning Model* Conference presentation at the United States National Congress on Computational Mechanics (USNCCM), Albuquerque, NM. Aug. 2023.
8. **Jobin K. Joy**, Cruzado, A., Benzerga, A. & Lagoudas, D. *FFT and FEA based Solutions in Micromechanical Modeling of SMAs* Conference presentation at the Society of Engineering Science Annual Technical Meeting, College Station, TX. Oct. 2022.
9. **Jobin K. Joy**, Haghgouyan, B., Karakalas, A. A., Vasoya, M. & Lagoudas, D. C. *Machine learning model for predicting SMA actuation response* Conference presentation at the Society of Engineering Science Annual Technical Meeting, College Station, TX. Oct. 2022.
10. **Jobin K. Joy**, Chaugule, P., Rajendran Harikrishnan, J.-B. l. G. & Lagoudas, D. C. *Machine learning model for a crystal plasticity - shape memory alloy model* Conference presentation at the 16th U.S. National Congress on Computational Mechanics, Virtual. July 2021.
11. Cruzado, A., **Jobin K. Joy**, A. S., Benzerga, A. A. & Lagoudas, D. C. *Spectral Homogenization Approach for Precipitation-hardened Shape Memory Alloy Design* Conference presentation at the 5th World Congress on Integrated Computational Materials Engineering, Indianapolis. July 2019.
12. **Jobin K. Joy**, Cruzado, A., Solomou, A., Benzerga, A. A. & Lagoudas, D. C. *Representative Volume Element Size in Micromechanical Modeling of Precipitated SMAs* Conference presentation at the SPIE Smart Structures + Nondestructive Evaluation, Denver. Mar. 2019.

13. **Jobin K. Joy**, Cruzado, A., Solomou, A., Benzerga, A. & Lagoudas, D. C. *Estimation of Representative Volume in Micromechanical Modeling of Precipitation Hardened SMAs* Conference presentation at the IUTAM Symposium on Phase Transformations in Shape Memory Materials: Modeling and Applications, Austin. Apr. 2019.

14. **Jobin K. Joy**, Umale, T., Solomou, A., Karaman, I. & Lagoudas, D. C. *Micromechanical Modeling of Precipitated NiTiHf SMAs* Conference presentation at the The ASME Conference on Smart Materials, Adaptive Structures and Intelligent Systems, Louisville. Sept. 2019.

15. **Jobin K. Joy**, Solomou, A., Baxevanis, T. & Lagoudas, D. C. *Constitutive Response of Precipitation Hardened Ni-Ti-Hf Shape Memory Alloys through Micromechanical Modeling* Conference presentation at the SPIE Smart Structures + Nondestructive Evaluation, Denver. Mar. 2018.

16. **Jobin K. Joy**, Solomou, A., Baxevanis, T. & Lagoudas, D. C. *Predicting the Constitutive Response of Precipitation Hardened NiTiHf* Conference presentation at the SPIE Smart Structures + Nondestructive Evaluation, Portland. Mar. 2017.

17. **Jobin K. Joy** & Harursampath, D. *Computational Modelling of Resin Flow during Composite Manufacturing Process using VAM* Conference presentation at the 6th ICTACEM international conference, Kharagpur. Dec. 2014.

18. Kumar, R., Jain, M., **Jobin K J**, V, S. R. & Balachandran, N. *Thermal Analysis of Electronic Packages Housed Inside a MALE UAV using CFD* Conference presentation at the 9th All India Combined Rajbhasha Technical Seminar, Hyderabad. Feb. 2014.

Draft & Under Review

1. **Jobin K. Joy**, Cruzado, A., Benzerga, A. & Lagoudas, D. *Micromechanical and Statistical Determination of the RVE Size with Local Variation of Volume Fraction and Shape of Heterogeneities: Application to Shape Memory Alloys* : Draft.

2. **Jobin K. Joy**, Talapatra, A. A., Rovinelli, A., Lebensohn, R. A. & Capolungo, L. *Modeling high temperature tensile and creep response in Grade-91 steel: A comparison of Manuel and Bayesian Calibration Methods* : Draft.

3. **Jobin K. Joy**, Karakalas, A. A., Xu, L. & Lagoudas, D. C. *Advanced Constitutive Modeling & Structural Analysis Applications* Chapter under review (Springer). 2025.

4. Karakalas, A. A., Tian, H., Hernandez, E. A. P., **Jobin K. Joy** & Lagoudas, D. C. *Constitutive Modeling of Shape Memory Alloys – Theory and Implementation* Chapter under review (Springer). 2025.