

# Curriculum Vitae



## PERSONAL INFORMATION

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Name: Manas Vijay Upadhyay

Position: Professor, Department of Mechanics, Ecole Polytechnique

Affiliation: Laboratoire de Mécanique des Solides (LMS), Ecole Polytechnique

Researcher identifiers:

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Scopus ID: [55405261700](https://scopus.com/authid/detail.url?authorID=55405261700)

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Google Scholar: <https://scholar.google.com/citations?user=kfZ1ONUAAAAJ&hl=en>

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[https://www.researchgate.net/profile/Manas\\_Upadhyay](https://www.researchgate.net/profile/Manas_Upadhyay)

## WORK EXPERIENCE

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- **Program Head, Master of Mechanics** Sep 2024 – present  
*Institut Polytechnique de Paris, France*
- **Professor** Sep 2024 – present  
*Department of Mechanics, Ecole Polytechnique, France*
- **Visiting Associate Professor** Jan – Feb 2025  
*Department of Mechanical Engineering, Indian Institute of Technology Bombay, India*
- **Assistant Professor** Jan 2019 – Aug 2024  
*Department of Mechanics, Ecole Polytechnique, France*
- **Post-Doctoral Researcher** Dec 2014 – Aug 2018  
*Paul Scherrer Institute, Switzerland*
- **Visiting Scientist**  
*Danmarks Tekniske Universitet (DTU), Denmark* Jan 2022, Aug 2024  
*Carnegie Mellon University, USA* May 2022  
*Los Alamos National Laboratory, USA* Feb – Mar 2016, Aug – Sep 2014
- **Research Engineer/Doctoral researcher** Jan 2013 – Dec 2014  
*LEM3, CNRS & Georgia Tech Lorraine, France*
- **Graduate Research Assistant** Jan 2010 – Dec 2014  
*Georgia Tech Lorraine, France and Georgia Institute of Technology, USA*

## EDUCATION

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- **Habilitation à diriger des Recherches (HDR)** Oct 2022  
*Institut Polytechnique de Paris, France*  
Memoir title Modeling, Simulation and Experiment Synergy to engineer additively manufactured microstructures
- **Ph.D. (Mechanical Engineering)** Dec 2014  
*Georgia Institute of Technology, USA*  
Dissertation [“On the role of defect incompatibilities on mechanical properties of polycrystalline aggregates: a multi-scale study”](#)
- **Master of Science (Mechanical Engineering)** May 2012  
*Georgia Institute of Technology, USA*
- **Bachelor of Engineering (Mechanical Engineering)** May 2009  
*K. J. Somaiya College of Engineering, University of Mumbai, India*

**AWARDS, SCHOLARSHIPS AND RECOGNITION**

- Acta Materialia – 2024 Outstanding Reviewer award Sep 2025
- Eurotech Visiting Researcher Program Award (visit to DTU) Dec 2024  
Eurotech Universities Alliance
- Jean & André Rist Medal 2022 Dec 2022  
Société Française de Métallurgie et de Matériaux (SF2M)
- Invited paper contribution to special issue “Emerging Leaders 2021” of journal “Modelling and Simulation in Materials Science and Engineering”, IOP Publishing Mar 2021  
<https://iopscience.iop.org/journal/0965-0393/page/emerging-leaders-2021>
- **ERC Starting Grant 2020** Sep 2020
- Invited paper contribution to special issue of journal “Advanced Modeling and Simulation in Engineering Sciences” Oct 2019
- Scripta Materialia – 2017 Outstanding Reviewer award Apr 2017
- Student scholarship, 6<sup>th</sup> Multiscale Materials Modeling Conference, Singapore Oct 2012
- Travel Grant, NSF USA, PACAM XII conference, Trinidad and Tobago Jan 2012
- JRD Tata Educational Trust academic excellence grant for the year 2006-2007 Mar 2008

**RESEARCH GRANTS AND PROJECTS (2.25 M€ / 3.02 M€ AS PI)**

- **IMP3D** – Improving processing, microstructures and performance of 3D printed metals through experimental and modeling investigations assisted by machine learning  
Agency: Agence National de la Recherche (ANR)  
Instrument: Appel à Projet (AAP) 2023  
ID: ANR-24-CE08-3737  
Institutions: University of Lorraine, Ecole Polytechnique and University of Grenoble-Alpes  
Co-PIs: Vincent Taupin, Manas Upadhyay, Marc Fivel  
Core scientific team: Andreas Ntinos (Ph.D. student), Guilhem Martin (Professor, University of Grenoble-Alpes), Antoine Guitton (Associate Professor, University of Lorraine)  
Dates: October 2024 – August 2028  
Funds: 646,976 €  
Webpage: <https://anr.fr/Project-ANR-24-CE08-3737>
- **LaserSurf** – Rapid laser surface treatment of printed metal parts to improve fatigue and wear resistance  
Agency: Interdisciplinary Center for Defense and Security Studies (CIEDS), France  
Instrument: Appel à projet (AAP) 2023  
ID: LaserSurf  
Institution: Ecole Polytechnique  
PI: Manas V. Upadhyay  
Core scientific team: T. Andrieux (Ph.D. student), M. Sazerat (Post-doc), A. Baganis (Post-doc), D. Weisz-Patrault (CNRS researcher)  
Dates: Oct 2024 – Sep 2028  
Funds: 699,712 €
- **GISTEAM3** – Characterization of GraIn Structure generated by L-PBF process at Track scale through Experiment And thermo-Metallurgical-Mechanical Modelling  
Agency: Scientific Interest Group (GIS) between industry and academia – High Energies in ADditive manufacturing (HEAD)  
Instrument: GIS HEAD 2022  
ID: GISTEAM3  
Institutions: Ecole des Mines and Ecole Polytechnique  
Co-PIs: Yancheng Zhang and Manas V. Upadhyay  
Core scientific team: Zixuan Li (Ph.D. student), Michel Bellet (Professor, Ecole des Mines), C.-A. Gandin

Michel Bellet (CNRS Researcher, CEMEF)

Dates: September 2022 – August 2025

Funds: 120,000 €

- **GAMMA** – Harnessing solid-state thermal cycling to Guide microstructure evolution of Additively Manufactured Metallic Alloys  
Agency: **European Research Council (ERC)**  
Instrument: **Starting Grant 2020**  
ID: 946959  
Institution: Ecole Polytechnique  
PI: Manas V. Upadhyay  
Core scientific team: N. Mohanan (Ph.D. student), G. D. Lima-Chaves (Ph.D. student), K. A. Abdesselam (Ph.D. student), S. Gaudez (Post-doc), J. G. Santos Macías (Post-doc), K. Chen (Post-doc)  
Dates: March 2021 – February 2026  
Funds: 1,499,877 €  
Webpage: <https://cordis.europa.eu/project/id/946959>
  
- **MiAM** – Microstructure evolution during metal Additive Manufacturing  
Agency: Fédération Francilienne de Mécanique (F2M), Île de France France  
Instrument: Coup de Pouce (Kickstarter) Grant 2019  
Grant ID: Coup de Pouce 2019  
Institutions: Ecole Polytechnique and CentraleSupélec  
Co-PIs: Manas V. Upadhyay and Eva Hériprié  
Core scientific team: Meriem Ben Haj Slama (post-doc)  
Dates: October 2020 – September 2021  
Funds: 50,000 €  
Webpage: <https://f2m.cnrs.fr/evenements/le-coup-de-pouce-de-la-f2m/>

## MENTORING AND SUPERVISION

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**25 student/post-doc supervisions:** 7 PhD students, 6 post-doctoral researchers, 1 Master's thesis student, 1 short-term PhD exchange student, 5 Master's interns, 1 Bachelor's thesis student and 4 Bachelor's interns

- **Ph.D. students**
  - **Théo Andrieux** (*Ecole Polytechnique, France*) Oct 2025 –  
Thesis Title: Rapid surrogate modelling of AM process-microstructure-properties  
Project: CIEDS LaserSurf
  - **Andreas Ntinou** (*Ecole Polytechnique, France*) Oct 2025 –  
Thesis Title: Modeling thermomechanical response of Cu-Cr binary alloy during laser scanning  
Project: ANR IMP3D
  - **Ayman Grani** (*Ecole Polytechnique, France*) Oct 2024 –  
Thesis Title: Modeling dislocation mechanics without imposed kinetic or kinematic rules on dislocation lines  
Project: Independent (Overheads of ERC Starting Grant 2020 project GAMMA (# 946959))
  - **Zixuan Li** (*Ecole des Mines de Paris, France*) Nov 2022 –  
Thesis Title: Characterization of grain structure generated by L-PBF process at track scale through experiment and thermo-metallurgical-mechanical modeling  
Project: GISTEAM3
  - **Dr. Gabriel Dante Lima-Chaves** (*Ecole Polytechnique, IPP, France*) Oct 2021 – Sep 2024  
Thesis Title: On the thermomechanics of field dislocations  
Project: ERC Starting Grant 2020 project GAMMA (# 946959)  
Current position: Engineer at Michelin (Clermont-Ferrand)
  - **Dr. Kouider Abdellah Abdesselam** (*Ecole Polytechnique, IPP, France*) Sep 2021 – Dec 2024  
Thesis Title: Exploring in-process laser to alter microstructure and mechanical response of additive manufactured Ti-6Al-4V  
Project: ERC Starting Grant 2020 project GAMMA (# 946959)  
Current position: Post-doc in the group of Prof. Andreas Mortensen (EPFL)

- **Dr. Nikhil Mohanan** (*Ecole Polytechnique, IPP, France*) Sep 2020 – May 2024  
Thesis title: On the intergranular response during laser scanning of additively manufactured stainless steel: a thermomechanical simulation study  
Project: ERC Starting Grant 2020 project GAMMA (# 946959)  
Current position: Engineer at Parrot drone company
- **Post-doctoral researchers**
  - **Dr. Antonios Baganis** (*Ecole Polytechnique, France*) Sep 2025 –  
Project: LaserSurf – CIEDS-AID
  - **Dr. Marjolaine Sazerat** (*Ecole Polytechnique, France*) May 2025 –  
Project: LaserSurf – CIEDS-AID
  - **Dr. Kewei Chen** (*Ecole Polytechnique, France*) Mar 2023 – Feb 2025  
Project: ERC Starting Grant 2020 project GAMMA (# 946959)  
Current position: Seeking a second post-doc
  - **Dr. Juan Guillermo Santos Macias** (*Ecole Polytechnique, France*) May 2021 – Sep 2023  
Project: ERC Starting Grant 2020 project GAMMA (# 946959)  
Current position: Researcher at IMDEA Materiales (Spain)
  - **Dr. Steve Gaudez** (*Ecole Polytechnique, France*) Mar 2021 – May 2023  
Project: ERC Starting Grant 2020 project GAMMA (# 946959)  
Current position: In second post-doc at the Paul-Scherrer Institute with a scholarship. He also won the SF2M Bodycote prize during his time in my group. Applied for CNRS position in Jan 2025.
  - **Dr. Meriem Ben Haj Slama** (*Ecole Polytechnique, CentraleSupélec, France*) Oct 2020 – Sep 2021  
Project: F2M Coup de pouce 2019 project MiAM  
Current position: Application Scientist, Bruker Nano Analytics, Germany
- **Master's thesis**
  - **Nikhil Mohanan** (ERASMUS+ *St. Petersburg Polytechnique Uni., Russia*) Feb – Aug 2020  
Thesis title: Thermo-mechanical model to study microstructure evolution during additive manufacturing
- **PhD exchange student project**
  - **Milovan Zecevic** (*University of New Hampshire, USA*) Mar – Jul 2017  
Thesis director: Marko Knezevic (University of New Hampshire, USA)  
Supervisor: Manas V. Upadhyay (during 3-month stay at Paul Scherrer Institut)  
Project title: Effect of strain rate and plastic work on martensitic transformation kinetics of austenitic stainless steel 304
- **Master's internship/project**
  - **Andreas Ntinis** (M2, Institut Polytechnique de Paris, France) Mar – Jul 2025  
Project title: Polycrystal Thermo-elasto-viscoplastic simulations to study microstructure evolution of multiphase systems
  - **Hind Meissera** (*Université Grenoble Alpes, France*) Apr – Jun 2023  
Project title: Study of the mechanical response of laser-scanned 3D printed wall samples
  - **Emmanuelle Guerret** (*Ecole Polytechnique, France*) Apr – Aug 2020  
Project title: A macroscale fully-coupled thermo-mechanical model to simulate metal additive manufacturing
  - **Nikhil Mohanan** (*St. Petersburg Polytechnique University, Russia*) Jun – Aug 2019  
Project title: Developing accelerated parallelized crystal plasticity model
  - **Amina Matt** (*EPFL, Switzerland*) Aug – Dec 2015  
Project title: Designing sample geometry for biaxial loading using finite element modeling
- **Bachelor Thesis**

- **Hugo Pinsard** (*Ecole Polytechnique, France*) Jan – Feb 2023  
Project title: Study on precipitate evolution within additively manufactured 316L stainless steel micropillars subjected to thermal cycling and annealing heat treatments
- **Bachelor's internship projects**
  - **Hugo Pinsard** (*Ecole Polytechnique, France*) Jun – Jul 2022  
Project title: Synchrotron X-ray diffraction and radiography during laser metal deposition of a Ti6Al4V alloy
  - **Andrew Boardman** (*University of Cambridge, United Kingdom*) Jul – Sep 2017  
Project title: Investigation of the interaction of dislocations with a  $\Sigma 5$  symmetric tilt grain boundary using atomistic simulations
  - **Thomas Southern** (*University of Cambridge, United Kingdom*) Jul – Sep 2016  
Project title: Dislocation nucleation at the  $\Sigma 5(310)[001]$  symmetric tilt grain boundary in aluminium subjected to equibiaxial loading

## TEACHING

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- **Engineering cycle/Master's level courses**
  - Behavior of Materials: Plasticity and Fracture (*Ecole Polytechnique*) 2022 – 2025
  - Mechanics of coupled multi-physics systems (*Ecole Polytechnique*) 2021, 2022
  - Deformation of materials – experiments (*Ecole Polytechnique*) 2020
  - Mechanics of Continuous Media 2 (*Ecole Polytechnique*) 2019, 2020
- **Bachelor level courses**
  - Physics I – Mechanics and Heat (PHY101, *Ecole Polytechnique*) 2020 – 2023
  - Waves in Fluids with Geophysics applications (PHY206, *Ecole Polytechnique*) 2019, 2020
  - Mechanics of Deformable bodies (Teaching assistant, *Georgia Tech Lorraine*) 2012

## PROFESSIONAL SERVICE, MEMBERSHIPS & RESPONSIBILITIES

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- Contributing a chapter "Mechanics at Small scales", White book of Mechanics (France) 2025  
*French Associate of Mechanics and the High Council for Mechanics, France*
- **Official representative of Ecole Polytechnique at IIT Bombay and IISc Bangalore** to establish research collaborations and academic (student) exchanges – see attached emails Feb 2025
- **Volunteering with French Consulate in Mumbai** 2025 –
  - Promoting scientific education in France (includes giving seminars/webinars to Indian students at High school, Bachelors, Masters and Ph.D. levels, participating in workshops)
  - Making researchers and students aware of bilateral funding opportunities
- **Ph.D. thesis jury**
  - Christina Koenig (DTU, Denmark) Nov 2025
  - Pushkar Dhekne (KU Leuven, Belgium) Feb 2025
  - Houssam Kharouji (Université de Lorraine, Metz) – Rapporteur Dec 2024
  - Clément Ribart (Ecole des Mines, Université PSL, France) – Rapporteur Jan 2024
  - Juan Guillermo Santos Macías (Université Catholique de Louvain, Belgique) Mar 2021
- **Ph.D. Annual Monitoring Committee**
  - Sokratis Xenos (Ecole Polytechnique, France) Sep 2023
  - Mathieu Humy-Gaspel (Ecole des Mines ParisTech, France) Jun 2024, 2025
- **Grant proposal reviewer**
  - German Research Foundation (Deutsche Forschungsgemeinschaft) 2022 –
  - French National Research Agency (ANR) 2024 –
- **Scientific Reviewer**
  - Acta Materialia, Additive Manufacturing, Scripta Materialia, International Journal of Mechanical Sciences, International Journal of Solids and Structures, Modelling and Simulation in Materials Science and Engineering, Advanced Engineering Materials, Materials Characterization, Materials

- **Elected/Invited/Nominated Panel/Board of Directors/Council member**
  - Board of Directors – Fédération Francilienne de Mécanique (F2M) Jan 2025 –
  - Board of Directors – International Society for Materials Modelling (ISMM) Jan 2025 –
  - **BeamTime Allocation Panel (BTAP)** for 5 beamlines Jan 2025 –  
European Synchrotron Research Facility (ESRF), France
  - Elected Scientific councillor – Société Française de Métallurgie et de Matériaux (SF2M) Mar 2023 –
  - Scientific committee member – AAMS Oct 2022 –  
(<https://aams2023.com>)
  - Member
    - Société Française de Métallurgie et de Matériaux (SF2M) Jul 2021 –
    - Groupement de Recherche (GDR) – ALMA Sep 2020 –
    - Fédération Francilienne de Mécanique (F2M) Mar 2019 –
    - Association Mecamat (MECAMAT) Feb 2019 –
    - European Mechanical Society (EUROMECH) Aug 2017 –
    - The Minerals, Metals and Materials Society (TMS) Dec 2015 –
- **Organization**
  - Invited symposium co-organizer of “Plasticity and Damage at the Symposium on Mechanics of Metals – Experiments-Modelling synergy at EMMC20, Italy” Sep 2025
  - Invited symposium co-organizer of “Plasticity and Damage at the Microscale: Modeling, Simulation, and Experimental Synergy at COMPLAS 2025, Barcelona, Spain. ([Link](#))” Sep 2025
  - Invited symposium co-organizer Sep 2025  
Symposium O: Multiscale and multi-physics modeling of metal additive manufacturing processes, 11<sup>th</sup> Multiscale Materials Modeling (MMM) conference, Czech Republic
  - Invited lead organizer Sep 2024  
Symposium O: Multiscale and multi-physics modeling of metal additive manufacturing processes, 11<sup>th</sup> Multiscale Materials Modeling (MMM) conference, Czech Republic  
<https://mmm11.ipm.cz/symposia/o/multiscale-and-multi-physics-modeling-of-metal-additive-manufacturing-processes>
  - **Chairperson** and international scientific committee member Sep 2024  
Alloys for Additive Manufacturing Symposium (AAMS) 2024, Ecole Polytechnique, France (160 attendees) <https://aams2024.sciencesconf.org/>
  - Invited symposium co-organizer May 2024  
Symposium on Mechanics of Metals – Experiments and Modelling at the European Mechanics of Materials Conference (EMMC) conference, Spain <http://emmc19.org/symposium-s3.html>
  - Co-organizer June 2021  
EUROMECH colloquium 613 “[Microstructure and Micromechanisms during metal additive manufacturing](#)”, Ecole Polytechnique, France
  - Organizer Sep 2019 – Aug 2020  
Weekly LMS Laboratory Seminars, LMS, Ecole Polytechnique, France
  - Lead organizer Oct 2016  
Symposium M: “Synergy between modeling and experiments: from atomic to macroscopic scales” MMM 2016 conference, Dijon, France
  - President, Bureau des Etudiants (Student government) Aug 2009 – Jan 2010  
Georgia Tech Lorraine, France
- **Outreach: Invited speaker for “Applying for an ERC grant: Webinar for researchers from India”**  
Website: <https://euraxess.ec.europa.eu/worldwide/india/webinar-how-apply-european-research-council-grants-tips-and-support-indian>

## CERTIFICATIONS AND SPECIAL TRAINING

- Machine Learning: Regression Jul 2017

Coursera.org: <https://www.coursera.org/account/accomplishments/certificate/5T9M97LTTYJ7>

- Machine Learning Foundations: A Case Study Approach May 2017  
Coursera.org: <https://www.coursera.org/account/accomplishments/certificate/FKEET7B4RRJF>
- Directive Based GPU Programming: OpenACC and OpenMP Mar 2017  
*Centro Svizzero di Calcolo Scientifico (Swiss National Supercomputing Center), Switzerland*
- Summer school on Multiscale Modeling of Materials May 2015  
*Les Houches, France*

## KEYNOTE AND INVITED TALKS

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42. “Advancing microstructure modeling of rapid thermomechanical processes: Experiment-modelling synergy using a novel CW Laser-SEM coupling”, SimAM 2025, Pavia, Italy, Sep 2025.
41. “A crystallographic dislocation mechanics model”, COMPLAS 2025, Barcelona, Spain, Sep 2025.
40. **Keynote:** “Advancing microstructure modeling of rapid thermomechanical processes: Experiment-modelling synergy using a novel CW Laser-SEM coupling”, Additive Manufacturing Meeting (AMM) 2025, Wroclaw, Poland, Jun 2025.
39. “Advancing microstructure modeling in metal AM: Experiment-modelling synergy using a novel CW Laser-SEM coupling”, 2<sup>nd</sup> Cairo Symposium on Physics of Plasticity, Cairo, Egypt, Apr 2025.
38. “A novel CW Laser and SEM coupling to study microstructure evolution due to laser-matter interactions”, Advanced Materials Seminar, Invitation by Prof. D. Gianola, University of California Santa Barbara, Mar 2025.
37. “Advancing microstructure modeling of rapid thermomechanical processes: Experiment-modelling synergy using a novel CW Laser and SEM coupling”, Invitation by Prof. S. Das, IISc Bangalore, Feb 2025.
36. “Advancing microstructure modeling of rapid thermomechanical processes: Experiment-modelling synergy using a novel CW Laser and SEM coupling”, Invitation by Prof. A. Patra, IITB Mumbai, Feb 2025.
35. “Post-process lasering improves strength-ductility tradeoff and fatigue limit of additively manufactured stainless steels”, Invitation by Prof. S. Mishra, ICAMC 2025 Mumbai, Jan 2025.
34. “Operando synchrotron X-ray diffraction to study dislocation structure evolution during additive manufacturing”, Invitation by Dr. S. Kalacska, JMC (Condensed Matter Day) symposium, Marseille, Oct 2024.
33. **Keynote:** “Do dislocations evolve during metal additive manufacturing? An *in situ* synchrotron X-ray diffraction study”, Invitation by Prof. D. Juul Jensen, 44<sup>th</sup> Risø International Symposium on Materials Science, Denmark, Sep 2024.
32. “Do dislocations evolve during metal AM?”, Invitation by Dr. L. Capolungo, Symposium honoring Ricardo Lebensohn, Santa Fe, New Mexico, USA, Apr 2024.
31. “Finite deformation thermal field dislocation mechanics”, Invitation by Prof. T. Hochrainer, 5th Schöntal Symposium on "Dislocation Based Plasticity", Schöntal, Germany, Apr 2024.
30. “From coupling a continuous-wave laser with a scanning electron microscope to enhancing mechanical performance of a DED stainless steel”, Invitation by Prof. M. Charpagne, University of Illinois Urbana Champaign, USA, Mar 2024.
29. “Do dislocations evolve during metal additive manufacturing? a synchrotron X-ray diffraction study and dislocation thermo-mechanics modeling”, Invitation by Prof. S. Karagadde, IIT Bombay, Mumbai, India, Jan 2024.
28. “Do dislocations evolve during metal additive manufacturing? An *in situ* synchrotron X-ray diffraction study”, Invitation by Dr. U. Lienert, DESY, Hamburg, Germany, Nov 2023.
27. “From coupling a continuous-wave laser with a scanning electron microscope to enhancing mechanical performance of a DED stainless steel”, Invitation by Dr. A. Guitton, LEM3 laboratory, Metz, France, Nov 2023.
26. **Keynote:** “From coupling a continuous-wave laser with a scanning electron microscope to enhancing mechanical performance of a DED stainless steel”, Invitation by Dr. M. T. Perez Prado, Alloys for Additive Manufacturing Symposium (AAMS) Sep 2023 ([Link](#)) Madrid, Spain.
25. “Do dislocations evolve during metal additive manufacturing? A synchrotron X-ray diffraction study”, Invitation by Dr. J.-Y. Buffière, GDR ALMA, Rouen, France, Jun 2023.

24. “What happens to a stainless steel microstructure after solidification during metal additive manufacturing?”, Invitation by Dr. S. Puri, TMS 2023, San Diego, USA, Mar 2023.
23. “Do dislocations evolve during metal additive manufacturing? A synchrotron X-ray diffraction study and dislocation thermo-mechanics modeling”, Invitation by Prof. A. El-Azab, 1<sup>st</sup> Physics of Plasticity symposium, Cairo, Egypt, Mar 2023.
22. “Do dislocations evolve during additive manufacturing? – A synchrotron X-ray diffraction study and dislocation thermo-mechanics modeling”, Invitation by Dr. Eric Maire, Mateis laboratory, CNRS, INSA Lyon, France, Jan 2023.
21. “What happens to a stainless steel microstructure after solidification during metal additive manufacturing and under post-process heat treatments?”, Invitation by Dr. C.-A. Gandin, CEMEF laboratory, CNRS, Mines de Paris, France, Sep 2022.
20. “What happens to a stainless steel microstructure after solidification during metal additive manufacturing and under post-process heat treatments?”, Invitation by Dr. M. Fivel, *SiMaP laboratory, CNRS, Université Grenoble Alps*, France, Jul 2022.
19. “What happens to a stainless steel microstructure after solidification during metal additive manufacturing and under post-process heat treatments?”, Invitation by Prof. A. Acharya, *Carnegie Mellon University*, USA, May 2022.
18. “What happens to a stainless steel microstructure after solidification during metal additive manufacturing and under post-process laser scanning?”, Invitation by Prof. P. Withers, *University of Manchester*, UK, Apr 2022.
17. “What happens to a microstructure after solidification during metal additive manufacturing?”, Invitation by Dr. R. Lebensohn, *Los Alamos National Laboratory*, USA, Mar 2022.
16. “What happens to a microstructure after solidification during metal additive manufacturing?”, Invitation by Prof. C. Dariao, *California Institute of Technology*, USA, Mar 2022.
15. “Microstructure evolution due to solid-state thermal cycling during metal AM: experiments and modeling”, Invitation by Dr. E. Héripré, *MSSMat, CentraleSupélec*, France, Feb 2021.
14. “What happens to a microstructure after solidification during metal additive manufacturing?”, Invitation by Dr. L. Dresselhaus-Marais, *Lawrence Livermore National Laboratory*, Livermore, USA, Feb 2020.
13. “Micromechanical response during biaxial load path changes of stainless steel: in-situ neutron diffraction and multi-scale modeling”, Invitation by Prof. J. Ilorca, *IMDEA Materiales*, Getafe, Spain, June 2019.
12. “Multi-scale response during biaxial load path changes of stainless steel: in-situ neutron diffraction and multi-scale modeling”, Invitation by Dr. V. Taupin, *LEM3*, Metz, France, May 2019.
11. “Crystal plasticity fast Fourier transform (FFT): approach and applications”, Invitation by Dr. D. Weisz-Patrault, *LMS, Ecole Polytechnique*, Palaiseau, France, Mar 2019.
10. “Biaxial load path change response of stainless steel: in-situ experiments and multi-scale modeling”, Invitation by Prof. Akhtar Khan, *International Conference on Plasticity, Damage & Fracture 2019*, Panama City, Jan 2019.
9. “Multi-scale mechanical response of stainless steel subjected to biaxial strain path changes: in-situ diffraction and modeling”, Invitation by Prof. M. Barnett, *Deakin University*, Australia, Dec 2018.
8. “Biaxial load path change response of stainless steel: in-situ cruciform experiments and multi-scale modeling”, Symposium on Modeling and Simulation, *Thermec 2018*, Paris, Jul 2018.
7. “Biaxial load path change response of stainless steel: multi-scale modeling and in-situ cruciform experiments”, Symposium on multiscale modeling of polycrystalline materials at the *ESMC10 - 10<sup>th</sup> European Solid Mechanics conference*, Bologna, Jul 2018.
6. “Synergy between in-situ neutron diffraction and crystal plasticity simulations to understand material behavior”, Invitation by Prof. M. Strobl, *NIAG group, Paul Scherrer Institute*, Jun 2018.
5. “Biaxial load path change response of stainless steel: synergy between multi-scale modeling and experiments”, Invitation by Dr. K. Danas, *GDR MePhy Multiscale Methods workshop*, Paris, Jun 2018.
4. “Biaxial load path change response of stainless steel: cruciform experiments and multi-scale modeling”, *3<sup>rd</sup> Schoental Symposium – Dislocation based Plasticity*, Kloster Schöntal, Germany, Feb - Mar 2018.
3. “Multi-Scale FE-FFT modeling to study lattice strain evolution during biaxial strain path changes”, at *3<sup>rd</sup> Nuclear Materials Workshop*, Oberschan, May - June 2017.
2. “Lattice strain evolution during biaxial loading of cruciform shaped 316L SS: an FE-FFT multi-scale

approach”, Invitation by Dr. R. Lebensohn at *ICTAM 2016*, Montreal, Aug 2016.

1. “On the role of defect incompatibilities on mechanical properties of polycrystalline aggregates: a multi-scale study”, Invitation by Prof. H. Van Swygenhoven, *Paul Scherrer Institute*, Switzerland May 2014.

#### A. Peer-reviewed journal or book publications (excluding dissertation/habilitation memoir)

40. J. Dumbre, Z. Tong, Y. Chen, A. Rack, N. Isac, M. V. Upadhyay, M. Easton, D. Qiu, “Impact of build process on microstructural evolution in laser directed energy deposition of Ti-8.5Cu Alloy: An in situ synchrotron X-ray imaging and post-build electron microscopy study” *Additive Manufacturing* 109 (2025) 104841 ([Link](#))
39. K. A. Abdesselam, S. Gaudez, S. Van Petegem, V. Honkimäki, S. Hallais, L. Cornet, M. Vallet, M. V. Upadhyay, Title: “Altering microstructure and enhancing mechanical properties during direct energy deposition of Ti-6Al-4V via in-process laser heat treatments” *Materials & Design* 254 (2025) 113997 ([Link](#))
38. J. G. Santos Macías, K. Chen, A. Tanguy, N. Isac, L. Cornet, M. Vallet, M. V. Upadhyay. Title: “High-vacuum laser treatments enhance strength, ductility and fatigue limit of additively manufactured stainless steel” *Materials & Design* 254 (2025) 114064 ([Link](#))
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#### B. Ph.D. dissertation and HDR memoir

1. **Habilitation memoir**: M. V. Upadhyay, “Modeling, Simulation and Experiment Synergy to engineer microstructures of additively manufactured alloys”, *Institut Polytechnique de Paris*, Oct 2022.
2. **PhD dissertation**: M. V. Upadhyay, “On the role of defect incompatibilities on mechanical properties of polycrystalline aggregates: a multi-scale study”, *Georgia Institute of Technology*, (2014) ([Link](#))

#### C. Publications and patents under review

- **Patent 2** (*under first evaluation*): M. V. Upadhyay (60%), J. G. Santos Macías (20%), A. Tanguy (20%), Title: Method for surface treatment of metals or ceramics with a continuous wave laser beam and associated system. Submission date: 26 Feb 2024.
- **Patent 1** (*under second evaluation*): A. Tanguy (65%), M. V. Upadhyay (25%), J. G. Santos Macías (10%), “System to treat samples using a continuous-wave laser and characterize them using an SEM”. Submission date: 16 Dec 2022.
- K. Chen, O. Hercher, R. Poulain, J. Bourgon, C. Cabet, W. Pantleon, M V. Upadhyay, “Origin of faster recrystallization in directed energy deposited over powder-bed fused 316L stainless steel” (under review) (Preprint [Link](#))
- Z. LI, M. Bellet, C.-A. Gandin, M. V. Upadhyay, Y. Zhang, “Metallurgically-driven thermomechanical analysis of multiple side-to-side laser melting on a 316L substrate” (under review)