Justin DIRRENBERGER

Associate Professor at Cnam
Membre junior at Institut universitaire de France
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Expertise

- Mechanics of materials, architectured materials, modelling, advanced manufacturing, innovation

Professional Experience

- Co-Founder, TETMET, Paris, France (since May 2023)
  Development of the Adaptive Spatial Lattice Manufacturing (ASLM) process
- Associate Professor, Conservatoire National des Arts et Métiers, Paris, France (since Sep. 2013)
  Researcher PIMM / Head of materials engineering graduate program CNAM
- Co-Founder, XtreeE, Paris, France (since Sep. 2015)
  Technological solutions for large-scale additive manufacturing
- Research Engineer, Centre des Matériaux, MINES-ParisTech, Evry, France (Oct. 2009 – June 2013)
  Computational homogenisation of mechanical and thermal properties of architectured materials
- Research Engineer, Carbon Services, Schlumberger Ltd., Clamart, France (Feb. – Aug. 2009)
  Study of Portland cement carbonation in the context of CO_2 sequestration
- Research Engineer, EPFL, Lausanne, Switzerland (Mar. – Aug. 2008)
  Modeling of the particle size distribution effect on mechanical properties in cement paste
- Technician, Air Liquide Welding, St-Ouen-L'Aumône, France (Sep. 2005 – Sep. 2006)
  Spectroscopic characterization of arc-welding fumes
- Technician, SNCF, Agence d'Essai Ferroviaire, Vitry-sur-Seine, France (Sep. 2004 – Sep. 2005)
  Metrology and quality control of electromechanical testing equipment

Education

- HDR in Engineering Sciences, Sorbonne Université, Paris (2018)
- Ph.D. in Materials Science & Engineering, MINES-ParisTech, Paris (2012)
  Supervised by Prof. S. Forest and Prof. D. Jeulin
- Diplôme d'ingénieur in Materials Science & Engineering, Polytech' Paris-Saclay, Orsay (2009)
- M.Sc. in Materials Science & Engineering, Université Paris-Sud, Orsay (2009)
- DUT in Applied Physics, Université Paris-Sud, Orsay (2006)

Awards

- Nomination at Institut universitaire de France (Oct. 2024)
- FEMS Communication Award for Excellence in MSE, 1st runner-up (Jul. 2018)
- Jean Rist medal from SF2M (Oct. 2017)
- France-Australia Science Innovation Collaboration (FASIC) grant (Dec. 2016)
- National Young Academic Researcher Grant (ANR JCJC) (2016 – 2021)
- Doctoral scholarship from MINES-ParisTech (Oct. 2009 – Dec. 2012)
- Research fellowship from EPFL, Lausanne, Switzerland (Mar. – Aug. 2008)

Scientific Output

- 37 articles in international peer-reviewed journals
- 11 papers in international peer-reviewed conference proceedings
- 1 edited book, 13 scholarly book chapters, 2 patents
- 50 invited lectures out of 100+ oral communications, seminars, workshops, etc.

Innovation

- Co-founded XtreeE in 2015 to develop and commercialize large-scale additive manufacturing solutions. As of 2024, the company counts 15 FTE staff and is valued at 17 M€.
- Co-founded TETMET in 2023 to develop and commercialize the adaptive spatial lattice manufacturing (ASLM) process, enabling architectured materials for the industrial world. As of 2024, the company counts 10 FTE staff and is valued at 17.5 M€.

Funded Research Projects

- EU-funded :
  - H2020-MSCA-COFUND-2020-REDI (H2020 MSCA, 2022-2027) with RMIT Europe
  - H2020-SC5-2018 WOOL2LOOP (2018-2022) with XtreeE, St-Gobain, TU Delft, Oulu University
  - H2020-FOF-2016 HINDCON (2016-2019) with XtreeE, Holcim, VIAS, SINTEF, Fraunhofer Institute
- ANR-funded :
  - MIRACLES (2023-2027) with Université Grenoble-Alpes (SiMaP) and Université de Lorraine (LEM3)
  - REDESIGN4D (2021-2026) with Université Bretagne-Sud (IRDL) and INRAe
  - ModuFEET (2021-2025) with ENS Paris-Saclay (SATIE), Université de Lorraine (LEM3) and Safran
  - JCJC SCOLASTIC (2016-2021) with ArcelorMittal R&D
  - MAX-OASIS (2020-2024) with UPEM (MSME), ENS Paris-Saclay (LMT) and Sorbonne U (IJLRDA)
  - ALMARIS (2016-2020) with Onera (DMAS), UTT (LASMIS), Mines-ParisTech (CDM) and PolyShape
- CNRS-funded :
  - PEPS INSIS (2019) with Université Grenoble Alpes (SiMaP) and Chimie Paris (IRCP)
  - F2M-CNRS APHORISME (2014-2015) with UPEM (MSME) and ENS-Cachan (LMT)
- Other funding sources :
  - Institut Carnot Grant (2026-2029)
  - CNES R&T Grant with TETMET (2023)
  - CNES AVP Grant (2017, 2020)
  - CNES R&T Grant (2018-2019)
  - ENPC Research Grant (2015-2018)
  - HESAM Synergie Grant DEMOCRITE (2014-2015)
- Total research funding since 2014 : 1.9 M€
- Total research funding for the companies I created : 1.46 M€

International Mobility

- 1-week visit to Czech TU in Prague, Czechia, March 2023, invited by Dr. Martin Dŏskař
- 2-week visit to Monash University, RMIT University and Australian National University in Australia, December 2017, invited by the Australia Department of Defence and the French Embassy in Australia to represent France and CNRS (INSIS) at the EDTAS Symposium on Advanced Materials and Manufacturing
- 4-week visit to Monash University (Clayton, Australia) in November and December 2016, invited by Dr. A. Molotnikov through a PHC FASIC grant.
- 1-week visit to National University of Singapore in April 2016, invited by Prof. L. H. Poh
- 1-week visit to Centre of Molecular and Macromolecular Studies of the Polish Acadmy of Sciences in Łódź, Poland in December 2015, invited by Prof. A. Gałęski

Academic Responsibilities

- Supervision of 13 PhD candidates (6 on-going), 5 postdocs, and 12 MSc students
- Head of the materials engineering graduate program (MSc) at Cnam (2017-2024)
- Elected board member at the academic council of Cnam (2018-2022)
- Board member of GDR MéPhy (2021-), DIM MaTeRRE (2022-) and GDR Archi-Meta (2023-)
- Member of Mécamat (2010- elected board member since 2016), Euromech (2010-), DGM (2023-) and SF2M (2011- education committee member).

Scientific Event Organization

- Organizing chair of SF2M Annual Days in Nov. 2024 in Paris, France
- Organizing chair of CMDS-14,Continuum Models and Discrete Systems in Jun. 2023 in Paris, France
- Organizing chair of National Symposium on Mechanics of Materials in Jan. 2022 in Aussois, France
- 6 times organizing chair of GdR MePhy meetings between 2022 and 2025 in Paris, France
- Scientific committee member for the national confrence Matériaux in Strasbourg, France, Dec. 2018
- Organizing chair of an international workshop on architectured materials in Paris, May 2012
- Local organization staff for the ICMM2 conference in Paris, Sep. 2011

Outreach Activities

- Co-organization of a Tribunal for Future Generations at Cnam on the question *Should we still invent new materials?* as part of the annual days of the SF2M, Nov. 2024.
- Participation in the mathematical podcast *Trajectoires* #8 on AI use in mechanical design
- Invited conference on AI use in materials science and engineering during Pint of Science Paris 2019.

Justin Dirrenberger

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Education:

Sorbonne Université, Habilitation à Diriger des Recherches (HDR), Engineering Sciences, 2018
Thesis Title: *Towards an Integrated Approach for the Development of Architectured Materials*

Ecole des Mines de Paris, Ph.D., Materials Science & Engineering, 2012
Thesis Advisors: Prof. Samuel Forest, Prof. Dominique Jeulin
Thesis Title: *Effective Properties of Architectured Materials*

Université Paris-Saclay, M.Sc. & Diplôme d'Ingénieur, Materials Science & Engineering, 2009
Thesis Title: *Durable Oil-Well Cement for Safe and Reliable CO_2 Storage*

Professional Positions:

Institut universitaire de France, Paris, France
Membre junior, Innovation Chair, 2024-2029
Focus: *Research on smart lattice structures using ASLM technology*

TETMET, Paris, France
Co-founder & Scientific Advisor, 2023-present
Focus: *Disrupting metal-based manufacturing using laser metallurgy, robotics, and AI*

XtreeE, Rungis, France
Co-founder & Scientific Advisor, 2015-present
Focus: *Large-scale additive manufacturing technologies and services*

Conservatoire National des Arts et Métiers, Paris, France
Associate Professor of Metallurgy, 2013-present
Focus: *Computational modelling of architectured materials*

Armines, Paris, France
Research Engineer, 2013
Focus: *Computational modelling of the Payne effect in reinforced elastomers*

Centre des Matériaux, Ecole des Mines de Paris, Evry, France
Research Assistant, Computational Mechanics division, 2009-2012
Focus: *Homogenization of stochastic and deterministic architectured materials*

SRPC, Schlumberger, Clamart, France
Research Engineer, Carbon services, 2009
Focus: *Mechanical and chemical characterization of carbonated cement used in CCS*

Laboratory of Construction Materials, EPFL, Lausanne, Switzerland
Research Assistant, Materials Science & Engineering, 2008
Focus: *Microstructural and mechanical characterization of early-age white cement*

Air Liquide Welding, Saint-Ouen-L'Aumône, France
Research Assistant, 2005-2006
Focus: *Cr(VI) characterization in welding fumes using XRF and ICP-MS*

SNCF, Vitry-sur-Seine, France
Metrology technician, 2004-2005
Focus: *Qualification of metrological equipment for the rail industry*

Awards & Honors:

Membre junior IUF, Innovation Chair	2024
FEMS Communication Award for Excellence in MSE, 1st runner-up	2018
SF2M Jean Rist medal	2017
Mines-ParisTech Doctoral scholarship	2009
EPFL Research fellowship	2008

Leadership Positions:

Team leader, CoMet team, PIMM laboratory	2024-Present
Co-Founder, TETMET SAS	2023-Present
Nominated member, Conseil National des Universités, CNU 33	2023-Present
Board member, DIM MaTeRRe	2022-Present
Board member, GDR ARCHI-META	2022-Present
Board member, GDR MéPhy	2021-Present
Committee member, Education committee, SF2M	2018-Present
Elected member, Academic council, CNAM	2018-2022
Graduate Program Director, Materials Science & Engineering, CNAM	2017-2024
Elected board member, Mécamat	2016-2024
Elected member, UMR board, PIMM UMR 8006	2015-2017
Co-Founder, XtreeE SAS	2015-Present

Principal Research Interests:

Mechanics of materials; computational design; additive manufacturing; architectured materials; multiphysics coupling; computational homogenization; sustainability; crystal plasticity; mathematical morphology; laser processing; metallurgy; cementitious materials; fatigue; durability.

Statistical Summary:

1. Journal Articles (Refereed / Proceedings / Under Review / Citations) – 37 / 11 / 1 / 5740
2. h-index: 25
3. i10-index: 35
4. Book Chapters – 13
5. Edited Books – 1
6. Patents (awarded and pending) – 2
7. Invited and Plenary Lectures – 52
8. Postdoctoral Researchers (Past/Current) – 6/1
9. Ph.D. Students (Graduated/Current) – 9/6
10. M.Sc. Students (Graduated/Current) – 12/0
11. Undergraduate Researchers (Past/Current) –8/0

Professional Societies:

Mécamat (2010-)
Euromech (2010-)
Société Française de Métallurgie et Matériaux (SF2M) (2013-)
Deutsche Gesellschaft für Materialkunde (DGM) (2023-)

List of publication and lectures attached at the end of this document

References available upon request

Research Funding

(indicates I am PI. For projects where I am not PI, only funds under my control are listed)**

Current: (1.400 M€)

Funding Source and Project Title	Period Covered	Total Funding
Carnot projet structurant CRIC-AMI "Architectured materials under impact" (PI: P. Viot, Arts et Métiers, U Bordeaux)	01/2026-12/2029	214 800 €
**Paris Region PhD2025 « Eco-conception et optimisation aidée par l'IA de matériaux architecturés produits via ASLM »	10/2025-10/2028	120 000 €
**Internal AAP PIMM « Eco-conception et optimisation aidée par l'IA de matériaux architecturés produits via ASLM »	10/2025-10/2028	30 000 €
ANR PRC MIRACLES « Microtreillis résilients inspirés d'analogues en plasticité cristalline » (PI: S. Berbenni, CNRS, U Lorraine)	01/2024-12/2027	159 000 €
**Contrat doctoral Université Franco-Allemande (KIT) « Architecturation de matériaux obtenus par fabrication additive »	10/2023-10/2026	120 000 €
**Contrat doctoral Université Paris-Saclay « Modélisation des interconnexions par mousses métalliques »	10/2023-10/2026	120 000 €
**Stellantis "Computational design of multistable origami structures for car application"	01/2023-12/2026	40 000 €
H2020-MSCA-COFUND-2020 REDI "RMIT European Doctoral Innovators" (project led by RMIT)	03/2022-02/2027	255 712 €
ESA MOON-COMP « Lunar 3D printing of composite materials for energy dissipation » (PI: A. Le Duigou, U Bretagne-Sud)	03/2022-09/2025	163 440 €
ANR PRCE ModuFEET « Conception de modules d'électronique de puissance fiables sous contraintes électrique, électromagnétique et thermique » (PI: D. Labrousse, CNAM)	10/2021-09/2026	23 296 €
ANR PRC REDESIGN4D « Matériaux composites adaptatifs obtenus par machine learning et impression 4D » (PI: A. Le Duigou, U Bretagne-Sud)	10/2021-09/2026	154 000 €

Past: (1.015 M€)

Funding Source and Project Title	Period Covered	Total Funding
ANR PRC MAX-OASIS « Matériaux architecturés exotiques, ondes, anisotropie, instabilités » (PI: N. Auffray, U Gustave Eiffel)	09/2019-09/2023	175 000 €
**CNES AAP R&T « Matériaux architecturés par traitement laser localisé »	10/2021-09/2022	50 000 €
**ANR JCJC SCOLASTIC "Systematic computational optimization and local laser processing of steel-based architectured materials"	07/2016-06/2021	250 000 €
**Contrat Doctoral Spécifique Normalien « Propriétés mécaniques de treillis auxétiques hybrides »	09/2017-07/2021	120 000 €
ANR PRCE ALMARIS « Architecturation laser de matériaux superélastiques » (PI: C. Davoine, ONERA)	07/2016-12/2020	156 000 €
CNRS Projet exploratoire « Matériaux architecturés par fabrication additive » (co-PI: R. Dendievel, U Grenoble & F. Prima, ENSCP)	03/2019-12/2019	6 000 €
**CNES AAP R&T « Optimisation de matériaux architecturés pour application LALS »	03/2017-11/2019	46 000 €
**Ambassade de France en Australie « French-Australia Science Innovation Collaboration (FASIC) grant »	10/2016-12/2016	3 500 €
**CNES Avant-projet R&T « Matériaux architecturés »	09/2016-12/2016	12 000 €
**Lafarge-Holcim chair at Ecole des Ponts fund « Fabrication additive de matériaux cimentaires à grande échelle »	09/2015-09/2018	30 000 €
**F2M Grant « Approche holiste de la chiralité dans les métamatériaux architecturés » (co-PI: N. Auffray, U Paris-Est, M. Poncelet, ENS-Cachan)	11/2014-11/2015	50 000 €
**HESAM Université Synergie grant « Démonstrateur technologique pour une fabrication additive à grande échelle » (DEMOCRITE)	06/2014-06/2015	120 000 €

Classroom Teaching Record at Conservatoire National des Arts et Métiers (* denotes co-taught)

Course No.	Course Title	Credits	Enrollment
2024-2025 Academic Year			
USMA2D	Composite materials and structures	2	11
MTX104	High performance composite materials	2	10
2023-2024 Academic Year			
USMA1M	Literature review project	2	10
USMA27	Selection of materials and processes	2	22
USMA28	Additive manufacturing and optimal design*	2	22
USMA2D	Composite materials and structures	3	22
USMA2G	Project of expertise in materials*	3	22
2022-2023 Academic Year			
MTX104	High performance composite materials	6	15
USMA1E	Structure of materials*	2	12
USMA1M	Literature review project	2	12
USMA1R	Strength of materials	2	22
USMA21	Metal forming processes*	2	22
USMA27	Selection of materials and processes	2	21
USMA28	Additive manufacturing and optimal design*	2	21
USMA2D	Composite materials and structures	3	21
USMA2G	Project of expertise in materials*	3	21
2021-2022 Academic Year			
MTX001	Introduction to materials technology*	3	20
UTC405	Fundamentals of materials*	3	30
USMA1C	Thermodynamics of materials*	4	22
USMA1E	Structure of materials*	2	22
USMA1H	Physical metallurgy*	3	22
USMA1M	Literature review project	2	22
USMA1R	Strength of materials	2	21
USMA21	Metal forming processes*	2	21
USMA25	Industrial seminar	1	21
USMA27	Selection of materials and processes	2	20
USMA28	Additive manufacturing and optimal design*	2	20
USMA2D	Composite materials and structures	3	20
USMA2G	Project of expertise in materials*	3	20
2020-2021 Academic Year			
MTX001	Introduction to materials technology*	3	18
MTX104	High-performance composite materials	6	8
MTX111	Materials for aerospace applications	3	36
UTC405	Fundamentals of materials*	3	25
USMA1C	Thermodynamics of materials*	4	21
USMA1E	Structure of materials*	2	21
USMA1H	Physical metallurgy*	3	21
USMA1M	Literature review project	2	21
USMA1R	Strength of materials	2	20

Course No.	Course Title	Credits	Enrollment
USMA21	Metal forming processes*	2	20
USMA25	Industrial seminar	1	20
USMA27	Selection of materials and processes	2	17
USMA28	Additive manufacturing and optimal design*	2	17
USMA2D	Composite materials and structures	3	17
USMA2G	Project of expertise in materials*	3	17
2019-2020 Academic Year			
MTX001	Introduction to materials technology*	3	23
MTX104	High-performance composite materials	6	11
MTX111	Materials for aerospace applications	3	36
UTC405	Fundamentals of materials*	3	25
USMA1C	Thermodynamics of materials*	4	20
USMA1E	Structure of materials*	2	20
USMA1H	Physical metallurgy*	3	20
USMA1M	Literature review project	2	20
USMA1R	Strength of materials	2	17
USMA21	Metal forming processes*	2	17
USMA25	Industrial seminar	1	17
2018-2019 Academic Year			
MTX001	Introduction to materials technology*	3	18
MTX104	High-performance composite materials	6	8
MTX111	Materials for aerospace applications	3	36
UTC405	Fundamentals of materials*	3	20
USMA1C	Thermodynamics of materials*	4	17
USMA1E	Structure of materials*	2	17
USMA1H	Physical metallurgy*	3	17
USMA1M	Literature review project	2	17
2017-2018 Academic Year			
MTX103	Fundamentals of materials*	6	12
MTX104	High-performance composite materials	6	9
MTX111	Materials for aerospace applications	3	36
MTX231	Advanced materials technology*	6	7
MMC105	Physical metallurgy*	6	9
MMC116	Advanced metallurgy*	6	9
2016-2017 Academic Year			
MTX103	Fundamentals of materials*	6	13
MTX104	High-performance composite materials	6	29
MTX111	Materials for aerospace applications	3	36
MTX231	Advanced materials technology*	6	7
MMC105	Physical metallurgy*	6	33
2015-2016 Academic Year			
MTX103	Fundamentals of materials*	6	11
MTX104	High-performance composite materials	6	27
MTX111	Materials for aerospace applications	3	35
MTX231	Advanced materials technology*	6	11

Course No.	Course Title	Credits	Enrollment
MMC105	Physical metallurgy*	6	47
MMC114	Continuum mechanics*	6	19
MMC116	Advanced metallurgy*	6	12
2014-2015 Academic Year			
MTX001	Introduction to materials technology*	3	25
MTX103	Fundamentals of materials*	6	10
MTX104	High-performance composite materials	6	17
MTX111	Materials for aerospace applications	3	36
MTX231	Advanced materials technology*	6	8
MMC105	Physical metallurgy*	6	51
MMC114	Continuum mechanics*	6	15
2013-2014 Academic Year			
MTX001	Introduction to materials technology*	3	32
MTX103	Fundamentals of materials*	6	11
MTX104	High-performance composite materials	6	15
MTX111	Materials for aerospace applications	3	35
MTX231	Advanced materials technology*	6	10
MMC105	Physical metallurgy*	6	51

Teaching Record at other universities (vacations)

University	Course Title / Activity	Hours	Program
2024-2025 Academic Year			
ENSCI-Les Ateliers	Entrance examination	4	Dipl. Créateur Industriel
2023-2024 Academic Year			
Arts et Métiers	Mechanics of composite materials	3	Master MAGIS
Mines Paris-PSL	Introduction to architectured materials	7	MSc. PSL Materials Sci & Eng
2022-2023 Academic Year			
Arts et Métiers	Mechanics of composite materials	3	Master MAGIS
ENSCI-Les Ateliers	Entrance examination	8	Dipl. Créateur Industriel
2021-2022 Academic Year			
Arts et Métiers	Mechanics of composite materials	3	Master MAGIS
ENPC	Aluminium for construction	3	MS Génie Civil Européen
ENSA Paris-Malaquais	Final project examination	12	Dipl. architecte
ENSCI-Les Ateliers	Entrance examination	20	Dipl. Créateur Industriel
Ecole Boulle	Final project examination	8	DNMADE Métiers d'Art
2020-2021 Academic Year			
Arts et Métiers	Mechanics of composite materials	3	Master MAGIS
ENPC	Aluminium for construction	3	MS Génie Civil Européen
ENSA Paris-Malaquais	Final project examination	8	Dipl. architecte
ENSCI-Les Ateliers	Entrance examination	12	Dipl. Créateur Industriel
Ecole Boulle	Final project examination	8	DNMADE Métiers d'Art

University	Course Title / Activity	Hours	Program
2019-2020 Academic Year			
Arts et Métiers	Mechanics of composite materials	3	Master MAGIS
ENPC	Aluminium for construction	3	MS Génie Civil Européen
Ecole Polytechnique	Instabilities in architectured materials	3	Cycle ingénieur 3A - PHY582
ENSCI-Les Ateliers	Entrance examination	16	Dipl. Créateur Industriel
INSA Rouen	Architectured materials & 3D Printing	3	Cycle ingénieur 3A
2018-2019 Academic Year			
Arts et Métiers	Mechanics of composite materials	3	Master MAGIS
ENPC	Materials & 3D Printing	8	MS Design by data
ENSMP	Introduction to computational homogenization	7	MS DMS
ENSCI-Les Ateliers	Entrance examination	16	Dipl. Créateur Industriel
ENSA Paris-Malaquais	Final project examination	8	Dipl. architecte
ENSA Paris-Belleville	Project tutoring	6	Dipl. architecte
ENSA Marne-la-Vallée	Sustainability & construction materials	4	DPEA Archi. post-carbone
2017-2018 Academic Year			
Arts et Métiers	Mechanics of composite materials	3	Master MAGIS
ENPC	Materials & 3D Printing	8	MS Design by data
ENSMP	Introduction to computational homogenization	7	MS DMS
ENSCI-Les Ateliers	Entrance examination	16	Dipl. Créateur Industriel
ENSA Marne-la-Vallée	Sustainability & construction materials	4	DPEA Archi. post-carbone
2016-2017 Academic Year			
Arts et Métiers	Mechanics of composite materials	3	Master MAGIS
ENPC	Materials & 3D Printing	24	MS Design by data
ENSMP	Introduction to computational homogenization	7	MS DMS
ENSA Paris-Malaquais	Topology optimization	12	Dipl. architecte
ENSA Marne-la-Vallée	Sustainability & construction materials	4	DPEA Archi. post-carbone
2015-2016 Academic Year			
Arts et Métiers	Mechanics of composite materials	3	Master MAGIS
ENSMP	Physics and mechanics of random media	12	Cycle ingénieur 2A/3A
ENSA Paris-Malaquais	Final project examination	8	Dipl. architecte
ENSA Marne-la-Vallée	Sustainability & construction materials	4	DPEA Archi. post-carbone
2014-2015 Academic Year			
Arts et Métiers	Mechanics of composite materials	3	Master MAGIS
ENSMP	Physics and mechanics of random media	12	Cycle ingénieur 2A/3A
ENSMP	Solid mechanics (practical course)	16	Cycle ingénieur 2A
ENSA Paris-Malaquais	Final project examination	8	Dipl. architecte
2013-2014 Academic Year			
ENSMP	Physics and mechanics of random media	12	Cycle ingénieur 2A/3A
ENSMP	Solid mechanics (practical course)	16	Cycle ingénieur 2A
ENSA Paris-Malaquais	Final project examination	8	Dipl. architecte

Student Advising

Post-Doctoral Researchers:

Name	Context	Period
Yanda Chen	ANR MIRACLES	06/2025-12/2026
Guangjin Mou	ANR REDESIGN4D	03/2024-03/2025
Monia Grabow	ESA 4DPrinting	09/2022-09/2023
Federica Ongaro	CNES R&T project	11/2018-11/2020
Pierre Lapouge	ANR SCOLASTIC	03/2017-01/2019
Sébastien Turcaud	F2M APHORISME	03/2015-09/2015

Graduate Students:

Student	Alma Mater	Thesis Type	Period
Emeline Jacques	UCLouvain	PhD	10/2025-Present
Cameron Nelson	CNAM	PhD	10/2025-Present
Nicolas Lallemand	U Lorraine	PhD	03/2024-Present
Nadjib Degdeg	U Paris-Saclay	PhD	10/2023-Present
Oumayma Elmaalouf	Arts & Métiers	PhD	10/2023-Present
Joey Tallon	RMIT/CNAM	PhD	06/2022-Present
Pierre-Louis Pichard	U Bretagne-Sud	PhD	10/2022-12/2025
Kéliane Mégret	CNAM	PhD	11/2022-10-2025
Pei Sun	U Paris-Saclay	MSc	03/2023-09/2023
Rachel Azulay	Arts & Métiers	PhD	09/2020-09/2023
Antoine-Emmanuel Viard	Arts & Métiers	PhD	09/2017-03/2023
Zhige Wang	Arts & Métiers	PhD	09/2019-12/2022
Hugo Mouchard	Arts & Métiers	MSc	10/2021-07/2022
Tristan Chenevez	Arts & Métiers	MSc	10/2021-07/2022
Killian Soyez	Sigma Clermont	MSc	02/2021-09/2021
Frédéric Albertini	Arts & Métiers	PhD	09/2017-07/2021
Flavien Ghiglione	EPF	MSc	02/2020-07/2020
Romain Duballet	Ecole des Ponts	PhD	09/2015-09/2019
Théophile Catois	Sorbonne U	MSc	03/2019-09/2019
Shaobo Yang	Arts & Métiers	PhD	09/2015-12/2018
Noushin Torabian Dehkordi	Arts & Métiers	PhD	09/2014-06/2017
Regina Mutz	KIT/Arts & Métiers	MSc	02/2016-07/2016
Antonios Choleridis	Arts & Métiers	MSc	02/2015-07/2015
Yoann Angilella	Polytech'Paris-Saclay	MSc	03/2014-08/2014
Guillaume Langlet	CNAM	MSc	02/2014-07/2014
Lucas Callen	Arts & Métiers	MSc	02/2014-07/2014

Undergraduate Students internships:

Student	Alma Mater	Study year	Period
Niki Nouri	KIT/Arts & Métiers	M1	04/2017-07/2017
Paul Defiez	KIT/Arts & Métiers	M1	04/2015-07/2015
Patrick Moll	KIT/Arts & Métiers	M1	04/2014-07/2014
Matthieu Berteaux	KIT/Arts & Métiers	M1	04/2014-07/2014
Christoph Hellmann	KIT/Arts & Métiers	M1	04/2014-07/2014
Jacqueline Oliveira Gouveia	U Federal de Itajuba	M1	01/2014-06/2014
Nadja Gaudillière	ENSA Paris Malaquais	L3	03/2014-07/2014
Nanjunda S. Velu	NIT Karnataka	L3	05/2014-07/2014

Awards & Honors received by Dirrenberger Graduate Students:

Student Name	Awards	Year
Rachel Azulay	Fondation Arts et Métiers **Pierre Bézier Prize**	2025
Pierre-Louis Pichard	SAMPE Europe **1st Prize for Ph.D. Category**	2024
Joey Tallon	ICM-14 **Best Poster Award**	2023
Kéliane Mégret	ICM-14 **2nd Best Poster Award**	2023
Antoine-Emmanuel Viard	Mécamat **Best Poster Award**	2019
Frédéric Albertini	Académie Française **Jean Walter Zellidja Grant** PHC FASIC **Travel Grant**	2019 2018
Noushin Torabian Dehkordi	Fondation Arts et Métiers **Pierre Bézier Prize**	2017
Regina Mutz	FEMS Euromat Junior **Best Poster Award**	2016

Research Group Alumni

Past Postdoctoral Researchers

Dr. Guangjin Mou (currently a researcher at HKUST)
Dr. Monia Grabow (currently a research engineer at ComposiTIC)
Dr. Federica Ongaro (currently a researcher at Università di Trento)
Dr. Pierre Lapouge (currently a research engineer at TETMET)
Dr. Sébastien Turcaud (currently an associate at Meridiam)

Past Ph.D. Students

Dr. Pierre-Louis Pichard
Dr. Kéliane Mégret (currently a research engineer at Stellantis)
Dr. Rachel Azulay (currently a research engineer at TETMET)
Dr. Zhige Wang (currently a research engineer at Subsea7)
Dr. Antoine-Emmanuel Viard (currently Professor of Mechanics at Académie de Versailles)
Dr. Frédéric Albertini (currently Associate Professor at Université Paris-Saclay)
Dr. Romain Duballet (currently Chief Product Officer at XtreeE)
Dr. Shaobo Yang (currently a research engineer in China)
Dr. Noushin Torabian Dehkordi (currently a research engineer at ArcelorMittal R&D)

Past M.Sc. Students

Pei Sun (currently a Ph.D. candidate at U Picardie)
Tristan Chenevez (currently a research engineer at AMVALOR)
Hugo Mouchard (currently an engineer at Coelys)

Killian Soyez (currently Professor of Mathematics at Académie de Créteil)
Dr. Flavien Ghiglione (currently a research engineer at Safran)
Théophile Catois (currently a stage manager in the film industry)
Regina Mutz (currently a quality engineer at Innovative Sensor Technology AG)
Dr. Antonios Choleridis (currently a research engineer at ArcelorMittal R&D)
Yoann Angilella (currently an engineer at Carrier)
Guillaume Langlet (currently a consultant at Teamsquare)
Lucas Callen (currently a civil engineer)

Service Contributions

Ph.D. Committees (31)

Student	University	Date	Role
Thibaud Derieux	Université Paris-Saclay	12/2025	Reviewer
Pierre-Louis Pichard	Université Bretagne-Sud	12/2025	Examiner
Kéliane Mégret	Cnam	10/2025	Examiner
Rafael Viano	Ecole Polytechnique	10/2025	Reviewer
Great Oguguo	Ecole Polytechnique	05/2025	Reviewer
Claude Lajoie Ifounga	Université de Rouen Normandie	12/2024	Reviewer
Grégoire Markey	UTC	12/2024	Reviewer
Mélanie Horvath	UC Louvain (Belgium)	12/2024	Examiner
Caroline Vibert	Arts & Métiers	11/2023	Examiner
Guangjin Mou	Sorbonne Université	10/2023	Reviewer
Rachel Azulay	Arts & Métiers	09/2023	Examiner
Zahra Hooshmand Ahoor	Ecole Polytechnique	04/2023	Reviewer
Antoine-Emmanuel Viard	Arts & Métiers	03/2023	Examiner
Adeline Petit	Université d'Orléans	01/2023	Examiner
Zhige Wang	Arts & Métiers	12/2022	Examiner
Caroline Widomski	Université Paris-Saclay	12/2022	Reviewer
Marie Pirotais	Arts & Métiers	12/2022	Examiner
Aymen Danoun	Université de Bordeaux	11/2022	Examiner
Malik Spahic	Université Bretagne-Sud	07/2022	Examiner
Minghao Bi	RMIT (Australia)	04/2022	Reviewer
Frédéric Albertini	Arts & Métiers	07/2021	Examiner
Binghua Ma	Sorbonne Université	05/2021	Reviewer
Thibault Dassonville	Université Paris-Est	10/2020	Reviewer
Zhen Yin	McGill University (Canada)	04/2020	Reviewer
Tianyu Zhang	Université Paris-Est	12/2019	Reviewer
Othmane Zerhouni	Ecole Polytechnique	11/2019	Reviewer
Romain Duballet	Ecole des Ponts	09/2019	Examiner
Shaobo Yang	Arts & Métiers	12/2018	Examiner
Fadhel Chatti	ISAE SupAéro	12/2018	Examiner
Edgar Chuta Caceres	ESTP	06/2018	Examiner
Noushin Torabian Dehkordi	Arts & Métiers	06/2017	Examiner

Recruitment committees (6)

MCF at Cnam (section 28/33/60) in 2021
MCF at Université Paris-Saclay (section 28/33) in 2020
MCF at CentraleSupélec (section 60) in 2019
MCF at Cnam (section 28/33/60) in 2016
MCF at INSA Lyon (section 33/60) in 2016
MCF at Cnam (section 28/33) in 2014

Organizing committee chair

GDR MéPhy – Cohesive granular materials – 09/10/2025, Paris, France
GDR MéPhy – Functional Architectured Materials by Design – 23/05/2025, Paris, France
JA2024 SF2M – L'empreinte matériaux : enjeux et solutions – 18-21/11/2024, Paris, France
GDR MéPhy – Physics and Mechanics of Additive Manufacturing – 12/11/2024, Paris, France
GDR Méphy – Surface tension, geometry and soft solids – 13/10/2023, Paris, France
CMDS-14 – Continuum models and discrete systems symposium – 26-30/06/2023, Paris, France
GDR Méphy – Mechanics and Physics of biological surfaces – 21/03/2023, Paris, France
GDR Méphy – Friction & Slender Structures – 10/10/2022, Paris, France
GDR Méphy – Wave propagation in heterogeneous materials – 15/06/2022, Paris, France
Mécamat 2021+1 – Mécanique des matériaux architecturés – 17-21/01/2022, Aussois, France

Editorial responsibilities

Springer Book Series in *Adaptive Environments*, editorial board member, since 2017

Reviews of Publications and Proposals*:*

Proposals

Ad hoc reviewer, Agence Nationale de la Recherche, France
Ad hoc reviewer, CNRS, France
Ad hoc reviewer, DFG, German Research Foundation, Germany
Ad hoc reviewer, Canadian Foundation for Innovation, Canada
Ad hoc reviewer, Natural Sciences and Engineering Research Council of Canada, Canada
Ad hoc reviewer, Dutch Research Council, the Netherlands
Ad hoc reviewer, GAČR, Czech Science Foundation, Czech Republic
Ad hoc reviewer, Swiss National Science Foundation, Switzerland
Ad hoc reviewer, American University of Sharjah, United Arab Emirates
Ad hoc reviewer, European Innovation Council, Europe

Journals (63)

4D Printing
ACS Applied Materials & Interfaces
Additive Manufacturing
Additive Manufacturing Letters
Advanced Engineering Materials
Advanced Intelligent Systems
Advanced Intelligent Discovery
Advanced Materials
Advanced Materials Technologies
Applied Research
Architectural Science Review
Archive of Applied Mechanics
Archives of Civil and Mechanical Engineering

Archives of Computational Methods in Engineering
ASCE Journal of Structural Design and Construction Practice
ASME Journal of Applied Mechanics
ASME Journal of Engineering Materials and Technology
Automation in Construction
Biomaterials
BMC Biotechnology
Cement and Concrete Research
Cleaner Engineering and Technology
Cleaner Materials
Composite Science & Technology
Composite Structures
Composites Part C
Computational Materials Science
Computers & Structures
Comptes-Rendus de l'Académie des Sciences
Construction and Building Materials
Discover Mechanical Engineering
Engineering Fracture Mechanics
Engineering Structures
Engineering with Computers
European Journal of Mechanics / A Solids
Extreme Mechanics Letters
Finite Elements in Analysis and Design
Frontiers in Material
Innovative Infrastructure Solutions
International Journal of Engineering Science
International Journal of Mechanical Science
International Journal of Solids and Structures
Journal of Materials Engineering and Performance
Journal of Manufacturing and Materials Processing
Journal of the Mechanical Behavior of Biomedical Materials
Material Letters
Materials & Design
Materials
Materials Letters
Materials Science and Engineering A
Materials Science and Engineering B
Materials Science & Technology
Materials Today Communications
Meccanica
Mechanics of Materials
MRS Communications
Optics and Laser Technology
Powder Technology
Programmable Materials
Results in Engineering
Small Science
Sustainable Materials and Technologies
Thin-Walled Structures
Transport in Porous Media
Zeitschrift für Angewandte Mathematik und Mechanik

Expert mandated by the Department of Higher Education and Innovation for evaluating "Crédit Impôt Recherche" applications from 2015 to 2022.

Outreach activities*:*

Conference – Les nouveaux proceeds de fabrication – 16/05/2025, Fontainebleau, France
Organizing TGF – Faut-il encore inventer des matériaux ? – 20/11/2024, Paris, France
Pint of Science – Développement par IA de matériaux architecturés – 20/05/2019, Paris, France
Podcast – AI use in mechanical design – Trajectoires #8 30/06/2017, Paris, France

Scientific output

Justin DIRRENBERGER, Associate Professor (HDR), Cnam

January 29, 2026

Journal Impact Factors are obtained from Web of Science Journal Citation Reports for the publication year.
Number of citations are obtained from Google Scholar.
* indicates young researchers under my supervision at the time of publication.

A Refereed journal articles (37)

A37. K. Megret*, **J. Dirrenberger**, J. Monnoyer, C. Sollogoub, B. Goislard de Monsabert, L. Fernandez, S. Delalande, and S. Viollet. An energetic approach for comparing monomaterial compliant bistable mechanisms. *Journal of Mechanical Design* (**IF=2.9**), volume **147**(12), 2025, 123301. https://doi.org/10.1115/1.4068549

A36. F. Albertini*, **J. Dirrenberger**, C. Sollogoub, A. Molotnikov, J. Adrien, and E. Maire. Hybrid auxetics: Postponing failure with elastomer infiltration of Ti-6Al-4V lattices. *International Journal of Mechanical Sciences*. (**IF=9.4**), volume **306**, 2025, 110704. https://doi.org/10.1016/j.ijmecsci.2025.110704 (**1 citation**)

A35. P.-L. Pichard*, T. Le Gagne, L. Maheo, **J. Dirrenberger**, U. Lafont, and A. Le Duigou. 3D printing strategies and mechanical performance assessment of continuous basalt-fibre/PA12 composites with high fibre volume fraction. *Polymer Testing*. (**IF=6.0**), volume **150**, 2025, 108936. https://doi.org/10.1016/j.polymertesting.2025.108936 (**1 citation**)

A34. P.-L. Pichard*, L. Maheo, **J. Dirrenberger**, M. Castro, U. Lafont, and A. Le Duigou. Efficient energy-dissipative bioinspired architectured composite materials with high mechanical properties. *Additive Manufacturing* (**IF=11.1**), volume **109**, 2025, 104875. https://doi.org/10.1016/j.addma.2025.104875 (**5 citations**)

A33. **J. Dirrenberger**, P. Lapouge, R. Azulay, P. Evers, and T. Vroemen. Adaptive Spatial Lattice Manufacturing (ASLM): A Novel Approach to Efficient Lattice Structure Production. *Materials & Design* (**IF=7.6**), volume **249**, 2025, 113553 https://doi.org/10.1016/j.matdes.2024.113553 (**1 citation**)

A32. A. Le Duigou, M. Grabow*, F. Scarpa, J. Deschamps, C. Combescure, K. Labstie, **J. Dirrenberger**, M. Castro, and U. Lafont. Bioinspired 4D Printed Tubular/Helicoidal Shape Changing Metacomposites for Programmable Structural Morphing. *Advanced Materials Technologies* (**IF=6.4**), volume **10**(2), 2025, 2400237 https://doi.org/10.1002/admt.202400237 (**2 citations**)

A31. M. V. Vellayappan, F. Duarte, C. Sollogoub, **J. Dirrenberger**, A. Guinault, J. E. Frith, H. C. Parkington, A. Molotnikov, and N. R Cameron. Creation of Grooved Tissue Engineering Scaffolds from Architectured Multilayer Polymer Composites by a Tuneable One-Step Degradation Process. *Small* (**IF=13**), volume **20**(43), 2024, 2401902 https://doi.org/10.1002/smll.202401902 (**4 citations**)

A30. C. Vibert*, A.-L. Dupont, **J. Dirrenberger**, R. Passas, D. Ricard, and B. Fayolle. Relationship between chemical and mechanical degradation of aged paper: fibre versus fibre-fibre bonds. *Cellulose* (**IF=5.7**), volume **31**, 2024, pp.1855-1873 https://doi.org/10.1007/s10570-023-05683-x (**6 citations**)

A29. R. Azulay*, C. Combescure, **J. Dirrenberger**. Instability-induced pattern generation in architectured materials—A review of methods. *International Journal of Solids and Structures* (**IF=3.67**), volume **274**, 2023, 112240 https://doi.org/10.1016/j.ijsolstr.2023.112240 (**8 citations**)

A28. M. V. Vellayappan, F. Duarte, C. Sollogoub, **J. Dirrenberger**, A. Guinault, J. E. Frith, H. C. Parkington, A. Molotnikov, and N. R. Cameron. Fabrication of architectured biomaterials by multilayer co-extrusion and additive manufacturing. *Advanced Functional Materials* (**IF=19.92**), 2023, 2301547 https://doi.org/10.1002/adfm.202301547 (**12 citations**)

A27. A. Le Duigou, M. Grabow*, M. Castro, R. Toumi, M. Ueda, R. Matsuzaki, Y. Hirano, **J. Dirrenberger**, F. Scarpa, R. D'Elia, K. Labstie, and U. Lafont. Thermomechanical performance of continuous carbon fibre composite materials produced by a modified 3D printer. *Heliyon* (**IF=3.78**), volume **9**, 2023, e13581 https://doi.org/10.1016/j.heliyon.2023.e13581 (**9 citations**)

A26. Z. Wang*, O. Bouaziz, **J. Dirrenberger**, and P. Lapouge. Corrugation reinforced architectured materials by direct laser hardening: a study of geometrically induced work hardening in steel. *Steel Research International* (**IF=2.10**), 2023, 2200695 https://doi.org/10.1002/srin.202200695 (**2 citation**)

A25. Z. Wang*, **J. Dirrenberger**, P. Lapouge, S. Dubent, H. Jabir, and V. Michel. Microstructure Evolution and Mechanical Properties of AISI 430 Ferritic Stainless Steel Strengthened Through Laser Carburization. *ASME Journal of Engineering Materials and Technology* (**IF=1.63**), volume **144**(4), 2022, 041005 https://doi.org/10.1115/1.4055025 (**3 citations**)

A24. Z. Wang*, **J. Dirrenberger**, P. Lapouge, and S. Dubent. Laser treatment of 430 ferritic stainless steel for enhanced mechanical properties. *Materials Science and Engineering A* (**IF=5.23**), volume **831**, 2022, 142205 https://doi.org/10.1016/j.msea.2021.142205 (**26 citations**)

A23. F. Albertini*, **J. Dirrenberger**, C. Sollogoub, T. Maconachie, T. Leary, and A. Molotnikov. Experimental and computational analysis of the mechanical properties of composite auxetic lattice structures. *Additive Manufacturing* (**IF=11.00**), volume **47**, 2021, 102351 https://doi.org/10.1016/j.addma.2021.102351 (**63 citations**)

A22. I. Muñoz, J. Alonso-Madrid, M. Menéndez-Muñiz, M. Uhart, J. Canou, C. Martin, M. Fabritius, L. Calvo, L. Poudelet, R. Cardona, H. Lombois-Burger, N. Vlasopoulos, C. Bouyssou, **J. Dirrenberger**, A. Papacharalampopoulos, and P. Stavropoulos. Life cycle assessment of integrated additive–subtractive concrete 3D printing. *The International Journal of Advanced Manufacturing Technology* (**IF=2.93**), volume **112**, 2021, pp. 2149-2159 https://doi.org/10.1007/s00170-020-06487-0 (**73 citations**)

A21. A.-E. Viard*, **J. Dirrenberger**, and S. Forest. Propagating material instabilities in planar architectured materials. *International Journal of Solids and Structures* (**IF=3.21**), volume **202**, 2020, pp.532-551 https://doi.org/10.1016/j.ijsolstr.2020.05.027 (**12 citations**)

A20. F. Albertini*, **J. Dirrenberger**, A. Molotnikov, and C. Sollogoub. Computational investigation of the effective mechanical behavior for 3D pre-buckled auxetic lattices. *ASME Journal of Applied Mechanics* (**IF=2.77**), volume **86**, 2019, 111003 https://doi.org/10.1115/1.4044542 (**21 citations**)

A19. F. dell'Isola, P. Seppecher, M. Spagnuolo, E. Barchiesi, F. Hild, T. Lekszycki, I. Giorgio, L. Placidi, U. Andreaus, M. Cuomo, S.R. Eugster, A. Pfaff, K. Hoschke, R. Langkemper, E. Turco, R. Sarikaya, A. Misra, M. De Angelo, F. D'Annibale, A. Bouterf, X. Pinelli, A. Misra, B. Desmorat, M. Pawlikowski, C. Dupuy, P. Peyre, M. Laudato, L. Manzari, P. Göransson, C. Hesch, S. Hesch, P. Franciosi, **J. Dirrenberger**, F. Maurin, Z. Vangelatos, C. Grigoropoulos, V. Melissinaki, M. Farsari, W. Muller, B.E. Amali, C. Liebold, G. Ganzosch, P. Harrison, R. Drobnicki, L. Igumnov, F. Alzahrani, and T. Hayat. Advances in pantographic structures: design, manufacturing, models, experiments and image analyses. *Continuum Mechanics and Thermodynamics* (**IF=2.14**), volume **31**, 2019, pp. 1231-1282 https://doi.org/10.1007/s00161-019-00806-x (**224 citations**)

A18. M. De Angelo, M. Spagnuolo, F. D'Annibale, A. Pfaff, K. Hoschke, A. Misra, C. Dupuy, P. Peyre, **J. Dirrenberger**, and M. Pawlikowski. The macroscopic behavior of pantographic sheets dependsmainly on their microstructure: experimental evidence andqualitative analysis of damage in metallic specimens. *Continuum Mechanics and Thermodynamics* (**IF=2.14**), volume **31**, 2019, pp. 1181-1203 https://doi.org/10.1007/s00161-019-00757-3 (**76 citations**)

A17. Z.P. Wang, L.H. Poh, Y. Zhu, **J. Dirrenberger**, and S. Forest. Systematic design of tetra-petals auxetic structures with stiffness constraint. *Materials and Design* (**IF=5.77**), volume **170**, 2019, n. 107669 https://doi.org/10.1016/j.matdes.2019.107669 (**81 citations**)

A16. P. Lapouge*, **J. Dirrenberger**, F. Coste, and M. Schneider. Laser heat treatment of martensitic steel and dual-phase steel with high martensite content. *Materials Science and Engineering A* (**IF=4.08**), volume **752**, 2019, pp. 128-135 https://doi.org/10.1016/j.msea.2019.03.016 (**29 citations**)

A15. E. Ernault*, **J. Dirrenberger**, E. Richaud, and B. Fayolle. Prediction of stress induced by heterogeneous oxidation in epoxy/amine networks. *Polymer Degradation and Stability* (**IF=3.78**), volume **162**, 2019, pp. 112-121 https://doi.org/10.1016/j.polymdegradstab.2019.02.019 (**29 citations**)

A14. R. Duballet*, O. Baverel, and **J. Dirrenberger**. Space truss masonry walls with robotic mortar extrusion. *Structures* (**IF=1.65**), volume **19**, 2019, pp.41-47 http://doi.org/10.1016/j.istruc.2018.11.003 (**31 citations**)

A13. S. Yang*, **J. Dirrenberger**, E. Monteiro, and N. Ranc. Representative volume element size determination for viscoplastic and dissipative properties in polycrystalline materials. *International Journal of Solids and Structures* (**IF=2.79**), volume **158**, 2019, pp. 210-219 https://doi.org/10.1016/j.ijsolstr.2018.09.011 (**22 citations**)

A12. F. dell'Isola, I. Giorgio, L. Placidi, M. Spagnuolo, P. Peyre, C. Dupuy, **J. Dirrenberger**, M. Pawlikowski, and L. Igumnov. Pantographic metamaterials: A view towards applications. *Materials Physics and Mechanics*, volume **42**, 2019, pp. 637-645 https://doi.org/10.18720/MPM.4252019_17 (**4 citations**)

A11. R.A. Buswell, W.R. Leal de Silva, S.Z. Jones, and **J. Dirrenberger**. 3D printing using concrete extrusion: A roadmap for research. *Cement and Concrete Research* (**IF=5.62**), volume **112**, 2018, pp. 37-49 http://doi.org/10.1016/j.cemconres.2018.05.006 (**1649 citations**)

A10. R. Duballet*, O. Baverel, and **J. Dirrenberger**. Classification of building systems for concrete 3D printing. *Automation in Construction* (**IF=4.03**), volume **83**, 2017, pp. 247-258 http://doi.org/10.1016/j.autcon.2017.08.018 (**293 citations**)

A9. N. Torabian*, V. Favier, **J. Dirrenberger**, F. Adamski, S. Ziaei-Rad, and N. Ranc. Correlation of the high and very high cycle fatigue response of ferrite based steels with strain rate-temperature conditions. *Acta Materialia* (**IF=6.04**), volume **134**, 2017, pp. 40-52 http://doi.org/10.1016/j.actamat.2017.05.064 (**65 citations**)

A8. Z.P. Wang, L.H. Poh, **J. Dirrenberger**, S. Forest, and Y. Zhu. Isogeometric shape optimization of smoothed petal auxetic structures via computational periodic homogenization. *Computational Methods in Applied Mechanics and Engineering* (**IF=4.44**), volume **323**, 2017, pp. 250-271 http://doi.org/10.1016/j.cma.2017.05.013 (**145 citations**)

A7. N. Torabian*, V. Favier, S. Ziaei-Rad, **J. Dirrenberger**, F. Adamski, and N. Ranc. Thermal Response of DP600 Dual-Phase Steel under Ultrasonic Fatigue Loading. *Materials Science and Engineering: A* (**IF=2.76**), volume **677**, 2016, pp. 97-105 http://dx.doi.org/10.1016/j.msea.2016.09.025 (**32 citations**)

A6. A. Bironeau*, **J. Dirrenberger**, C. Sollogoub, G. Miquelard-Garnier and S. Roland. Evaluation of morphological representative sample sizes for nanolayered polymer blends. *Journal of Microscopy* (**IF=1.69**), volume **264**(1), 2016, pp.48-58 http://dx.doi.org/10.1111/jmi.12415 (**28 citations**)

A5. C. Gosselin, R. Duballet, Ph. Roux, N. Gaudillière, **J. Dirrenberger** and Ph. Morel. Large-Scale 3D Printing of Ultra-High Performance Concrete– A New Processing Route for Architects and Builders. *Materials & Design* (**IF=4.36**), volume **100**, 2016, pp. 102-109 http://dx.doi.org/10.1016/j.matdes.2016.03.097 (**1172 citations**)

A4. N. Auffray, **J. Dirrenberger** and G. Rosi. A complete description of bi-dimensional anisotropic strain-gradient elasticity. *International Journal of Solids and Structures* (**IF=2.08**), volume **69-70**, 2015, pp. 195-206 http://dx.doi.org/10.1016/j.ijsolstr.2015.04.036 (**133 citations**)

A3. **J. Dirrenberger**, S. Forest and D. Jeulin. Towards gigantic RVE sizes for stochastic fibrous networks. *International Journal of Solids and Structures* (**IF=2.21**), volume **51**(2), 2014, pp. 359-376 http://dx.doi.org/10.1016/j.ijsolstr.2013.10.011 (**156 citations**)

A2. **J. Dirrenberger**, S. Forest and D. Jeulin. Effective elastic properties of auxetic microstructures: anisotropy and structural applications. *International Journal of Mechanics and Materials in Design* (**IF=1.20**), volume **9**(1), 2013, pp. 21-33 http://dx.doi.org/10.1007/s10999-012-9192-8 (**201 citations**)

A1. **J. Dirrenberger**, S. Forest and D. Jeulin. Elastoplasticity of auxetic materials. *Computational Materials Science* (**IF=1.88**), volume **64**, 2012, pp. 57-61 http://dx.doi.org/10.1016/j.commatsci.2012.03.036 (**111 citations**)

B Authored or edited book (1)

O1. F. Willot, **J. Dirrenberger**, S. Forest, D. Jeulin, and A. V. Cherkaev. *Continuum Models and Discrete Systems. CMDS-14, Paris, France, June 26-30, 2023*, Springer, 2024, 278 p., ISBN: 9783031586644 https://link.springer.com/book/9783031586644.

C Refereed conference proceedings (12)

R12. N. Nouri, S. Dietrich, V. Schulze, P. Lapouge, and **J. Dirrenberger**. Influence of Tempering Transformation Induced Plasticity (T-TRIP) on the Evolution of Residual Stresses in Laser Heat Treated 50CrMo4 Steel. *QDE 2025: Proceedings of the 3rd International Conference on Quenching and Distortion Engineering*, May 6–7, 2025, Vancouver, Canada, pp. 42-50 https://doi.org/10.31399/asm.cp.qde2025p0042

R11. M. Menéndez-Muñiz, M. Chantin, C. R. Vintila, M. Fabritius, C. Martin, L. Calvo, L. Poudelet, J. Canou, M. Uhart, A. Papacharalampopoulos, P. Stavropoulos, N. O. E. Olsson, J. A. Tenorio, J. Alonso-Madrid, **J. Dirrenberger**, and I. Muñoz. Concrete hybrid manufacturing: A machine architecture. *Procedia CIRP* (**IF=2.10**), volume **97**, 2021, pp. 51-58 https://doi.org/10.1016/j.procir.2020.07.003 (**23 citations**)

R10. M. V. Vellayappan, C. Sollogoub, **J. Dirrenberger**, A. Molotnikov, and N. Cameron. Additive manufacturing of multilayered polymer composites produced by co-extrusion for cardiac patches application. *International Conference on Nanostructured Materials (NANO 2020)*, Jul 2020, Melbourne, Australia (1 page) https://search.informit.org/doi/10.3316/INFORMIT.208502967005710

R9. F. Ongaro*, F. Masson, K. Mathis, and **J. Dirrenberger**. Architectured materials for space applications: a computational tool for the parametric optimization of a three-dimensional lattice subjected to stiffness constraints *8th European Conference for Aeronautics and Aerospace Sciences (EUCASS)*, Jul 2019, Madrid, Spain (15 pages) https://doi.org/10.13009/EUCASS2019-167 (**1 citation**)

R8. R. Duballet*, O. Baverel, and **J. Dirrenberger**. Treillis spatiaux en extrusion robotisée de matériaux cimentaires. *DiXite3dPrint : Fabrication Additive pour la Construction. Quelle Actualité Nationale* , Ecole des Ponts ParisTech, Jan 2019, Champs-sur-Marne, France (1 page) https://hal-enpc.archives-ouvertes.fr/hal-02119339

R7. N. Gaudillière, C. Bouyssou, A. Mallet, P. Roux, M. Zakeri, R. Duballet, and **J. Dirrenberger**. Bénéfices temps et matière dans le recours au processus d'impression 3D béton pour des applications dans le domaine de la construction. *DiXite3dPrint : Fabrication Additive pour la Construction. Quelle Actualité Nationale* , Ecole des Ponts ParisTech, Jan 2019, Champs-sur-Marne, France (1 page) https://hal-enpc.archives-ouvertes.fr/hal-02119509

R6. **J. Dirrenberger**. From Architectured Materials to the Development of Large-scale Additive Manufacturing. *SPOOL*, volume **4**(1), 2017, ISSN 2215-0900 (4 pages) https://doi.org/10.7480/spool.2017.1.1910 (**2 citations**)

R5. N. Torabian*, V. Favier, S. Ziaei-Rad, F. Adamski, **J. Dirrenberger** and N. Ranc. Self-Heating Measurements for a Dual-Phase Steel under Ultrasonic Fatigue Loading for Stress Amplitudes below the Conventional Fatigue Limit. *Procedia Structural Integrity*, volume **2**, 2016, pp. 1191-1198 (8 pages) http://dx.doi.org/10.1016/j.prostr.2016.06.152 (**9 citations**)

R4. G. Rosi, N. Auffray and **J. Dirrenberger**. Wave propagation in the framework of strain gradient continua: the example of hexachiral materials. *22ème Congrès Français de Mécanique*, Lyon, France, August 2015 (3 pages) http://hdl.handle.net/2042/57379

R3. N. Gaudillière*, **J. Dirrenberger**, O. Baverel and C. Sollogoub. Additive Manufacturing for the Development of an Assembling System for Gridshells. In *What's the Matter? Materiality and Materialism at the Age of Computation*, 2014, ed. M. Voyatzaki, pp. 195-210, ISBN: 978-960-89320-6-7 (16 pages)

R2. **J. Dirrenberger**, S. Forest and D. Jeulin. Effective properties of auxetics made using selective laser melting. *Matériaux & Techniques*, volume **100**, S1, 2012, pp. 172-173 (2 pages)

R1. **J. Dirrenberger**, S. Forest, D. Jeulin and C. Colin. Homogenization of periodic auxetic materials. *Procedia Engineering*, volume **10**, 2011, pp. 1852-1857 http://dx.doi.org/10.1016/j.proeng.2011.04.307 (**90 citations**)

D Scholarly book chapters (14)

B14. N. Gaudillière-Jami, and **J. Dirrenberger**. Non-uniform truss modelling and energy consumption in adaptive space lattice manufacturing for steel structures . In *Structures and Architecture*, eds. M. Rinke, M. F. Hvejsel. CRC Press, London, 2025, pp 1727-1734, ISBN: 9781041111399. https://doi.org/10.1201/9781003658641-205 (**1 citation**)

B13. **J. Dirrenberger**. Matériaux architecturés élaborés par fabrication additive. In *Techniques de l'Ingénieur* [M4920]. Editions TI, 2025. https://doi.org/10.51257/a-v1-m4920

B12. F. Ongaro*, F. Masson, K. Mathis, and **J. Dirrenberger**. Continuum modelling of orthotropic hexatruss lattice materials: effective stiffness and experimental validation. In *Continuum Models and Discrete Systems. CMDS-14, Paris, France, June 26-30, 2023*, eds. F. Willot, J. Dirrenberger, S. Forest, D. Jeulin, and A. V. Cherkaev. Springer, 2024, pp. 105-125, ISBN: 9783031586644 https://doi.org/10.1007/978-3-031-58665-1_8 (**1 citation**)

B11. R. Duballet, R. Mesnil, N. Ducoulombier, P. Carneau, L. Demont, M. Motamedi, O. Baverel, J.-F. Caron, and **J. Dirrenberger**. Free deposition printing for space truss structures. In *DC 2020: Second RILEM International Conference on Concrete and Digital Fabrication*, eds. F. P. Bos, S. S. Lucas, R. J. M. Wolfs, and T. A. M. Salet. Springer, 2020, pp. 873-882, ISBN: 9783030499167 https://doi.org/10.1007/978-3-030-49916-7_85 (**15 citations**)

B10. N. Gaudillière, **J. Dirrenberger**, R. Duballet*, C. Bouyssou, A. Mallet, Ph. Roux, M. Zakeri. Industrialising Concrete 3D Printing: Three Case Studies. In *Design Transactions, Rethinking Information Modelling for a New Material Age*, eds. B. Sheil, M. Ramsgaard Thomsen, M. Tamke, and S. Hanna. UCL Press, 2020, pp. 158-165 https://doi.org/10.14324/111.9781787355026 (**14 citations**)

B9. F. dell'Isola, T. Lekszycki, M. Spagnuolo, P. Peyre, C. Dupuy, F. Hild, A. Misra, E. Barchiesi, E. Turco, and **J. Dirrenberger**. Experimental Methods in Pantographic Structures. In *Discrete and Continuum Models for Complex Metamaterials*, eds. F. dell'Isola, and D. J. Steigmann. Cambridge University Press, 2020, pp. 263-297, ISBN: 9781107087736 https://doi.org/10.1017/9781316104262 (**8 citations**)

B8. K. Kuzmenko, N. Gaudillière*, A. Feraille, **J. Dirrenberger**, and O. Baverel. Assessing the Environmental Viability of 3D Concrete Printing Technology. In *Impact: Design With All Senses*, eds. C. Gengnagel, et al. Springer, 2020, pp. 517-528 https://doi.org/10.1007/978-3-030-29829-6_40 (**27 citations**)

B7. N. Gaudillière, R. Duballet*, C. Bouyssou, A. Mallet, Ph. Roux, M. Zakeri, and **J. Dirrenberger**. Building Applications Using Lost Formworks Obtained Through Large-Scale Additive Manufacturing of Ultra-High-Performance Concrete. In *3D Concrete Printing Technology*, eds. J.G. Sanjayan, A. Nazari, and B. Nematollahi. Butterworth-Heinemann, 2019, pp. 37-58 https://doi.org/10.1016/B978-0-12-815481-6.00003-8 (**43 citations**)

B6. **J. Dirrenberger**, S. Forest and D. Jeulin. Computational homogenization of architectured materials. In *Architectured Materials in Nature and Engineering*, eds. Y. Estrin, Y. Bréchet, J. Dunlop, P. Fratzl. Springer Series in Materials Science, volume **282**, Springer, 2019, pp. 89-139 https://doi.org/10.1007/978-3-030-11942-3_4 (**17 citations**)

B5. N. Gaudillière, R. Duballet*, C. Bouyssou, A. Mallet, Ph. Roux, M. Zakeri, and **J. Dirrenberger**. Large-Scale Additive Manufacturing of Ultra-High-Performance Concrete of Integrated Formwork for Truss-Shaped Pillars. In *Robotic Fabrication in Architecture, Art and Design 2018*, eds. J. Willmann, P. Block, M. Hutter, K. Byrne, T. Schork. ROBARCH 2018. Springer, 2019, pp. 459–472 http://dx.doi.org/10.1007/978-3-319-92294-2_35 (**76 citations**)

B4. **J. Dirrenberger**. From Architectured Materials to Large-Scale Additive Manufacturing. In *Robotic Building*, ed. H. Bier. Springer Series in Adaptive Environments, Springer International Publishing, 2018, pp. 79–96 http://dx.doi.org/10.1007/978-3-319-70866-9_4 (**5 citations**)

B3. R. Duballet*, O. Baverel, and **J. Dirrenberger**. Design of Space Truss Based Insulating Walls for Robotic Fabrication in Concrete. In *Humanizing Digital Reality*, eds. K. De Rycke, et al., Springer, Singapore, 2018, pp. 453–461 http://dx.doi.org/10.1007/978-981-10-6611-5_39 (**19 citations**)

B2. N. Torabian*, V. Favier, S. Ziaei-Rad, **J. Dirrenberger**, F. Adamski and N. Ranc. Calorimetric Studies and Self-Heating Measurements for a Dual-Phase Steel Under Ultrasonic Fatigue Loading. In *Fatigue and Fracture Test Planning, Test Data Acquisitions, and Analysis*, ASTM STP1598, Z. Wei, K. Nikbin, P. McKeighan, and G. Harlow, Eds., ASTM International, West Conshohocken, PA, 2017, pp. 81–93 `http://dx.doi.org/10.1520/STP159820160053` (**7 citations**)

B1. B. Lecampion, J. Vanzo, F.J. Ulm, B. Huet, C. Germay, I. Khalfallah and **J. Dirrenberger**. Evolution of Portland cement mechanical properties exposed to CO2-rich fluids: Experimental investigation at different scales. In *MPPS 2011, Symposium on Mechanics and Physics of Porous Solids : A tribute to Pr. Olivier Coussy, Marne-la-Vallée, 18-20 avril 2011*, 2011, 406p `http://hal.archives-ouvertes.fr/hal-00595113/` (**19 citations**)

E Patents (2)

P2. K. Megret*, J. Monnoyer, M. Jaspart, **J. Dirrenberger**, S. Viollet, C. Sollogoub, S. Delalande, L. Fernandez, and B.Goislard de Monsabert. Equipement bistable et monobloc. Patent applied for on 17 April 2024. `https://patents.google.com/patent/FR3161401A1/`

P1. K. Mathis, F. Masson, and **J. Dirrenberger**. Amortisseur auxétique. Patent number FR3071290B1. Patent applied for on 19 September 2017, published on 13 September 2019 `https://patents.google.com/patent/FR3071290B1/` (**3 citations**)

F Invited lectures in international refereed conferences (7)

K7. **J. Dirrenberger**. Adaptive Space Lattice Manufacturing as an efficient alternative to 3D printing. *8th Built Environment Additive Manufacturing BE-AM, Formnext*, **Invited keynote lecture**, Frankfurt, Germany, November 2023.

K6. **J. Dirrenberger**. Architectured materials obtained through advanced manufacturing. *3rd International Conference on Additive Fabrication of Composites*, **Invited keynote lecture**, Tokyo, Japan, December 2022.

K5. **J. Dirrenberger**. Large-scale additive manufacturing: Challenges and opportunities for innovation. *1st RILEM International Conference on Concrete and Digital Fabrication*, **Invited keynote lecture**, Zurich, Switzerland, September 2018.

K4. **J. Dirrenberger**. Bio-inspired hybrid architectured materials obtained through additive manufacturing. *Euromat Junior Conference, FEMS Communication Award for Excellence in MSE lecture*, **Invited lecture**, Budapest, Hungary, July 2018.

K3. **J. Dirrenberger**, F. Albertini*, C. Sollogoub, and A. Molotnikov. Bio-inspired architectured hybrid lattice structures. *International workshop in honor of Dominique Jeulin, Physics and mechanics of random structures: from morphology to material properties*, **Invited lecture**, Oléron, France, June 2018.

K2. **J. Dirrenberger**. Large-scale additive manufacturing as a disruptive force in the construction industry. *1st Asia-Pacific International Conference on Additive Manufacturing*, **Invited lecture**, Melbourne, Australia, December 2017.

K1. **J. Dirrenberger**. From Materials Engineering to the Computational Development of Architectured Materials. *What's the Matter- Materiality and Materialism at the Age of Computation*, **Invited keynote lecture**, Barcelona, Spain, September 2014.

G Invited lectures in national refereed conferences (4)

N4. **J. Dirrenberger**, S. Yang*, E. Monteiro, and N. Ranc. Representative volume element size determination for viscoplastic polycrystalline materials. *4èmes Journées Matériaux Numériques*, **Invited keynote lecture**, Amboise, France, June 2019.

N3. **J. Dirrenberger**, Y. Qi, and A. Molotnikov. Preliminary results on the mechanical behavior of hybrid architectured lattice structures. *Journées annuelles de la SF2M*, **Jean Rist medal Invited keynote lecture**, Lyon, France, October 2017.

N2. **J. Dirrenberger**. Mécanique des matériaux auxétiques. **Invited lecture**, *Mini-symposium « Mécanique des matériaux architecturés », 12ème Colloque National en Calcul de Structures*, Giens, France, May 2015.

N1. **J. Dirrenberger**, S. Forest and D. Jeulin. Effective properties of auxetics made using selective laser melting. *Journées annuelles de la SF2M*, **Invited lecture**, Paris, France, October 2012.

H International refereed conference lectures (36)

C36. E. Jacques*, M. Farag, P. Lapouge, **J. Dirrenberger**, and A. Simar. Adaptive Spatial Lattice Manufacturing (ASLM): Scale effects for aluminum alloys. *20th European Mechanics of Materials Conference (EMMC20)*, Florence, Italy, May 2026.

C35. J. Tallon*, **J. Dirrenberger**, and A. Molotnikov. Mechanical Behaviour of Laser Powder Bed Fusion (PBF LB/M) Titanium Epoxy Hybrid Lattices. *8th conference of the Combined Australian Materials Societies (CAMS2024)*, Adelaide, Australia, December 2024.

C34. **J. Dirrenberger**.Computational Design of a New Generation Payload Adapter Fitting using Adaptive Spatial Lattice Manufacturing. *European Conference on Spacecraft Structures, Materials and Environmental Testing (ECSSMET 2024)*, ESTEC, Noordwijk, the Netherlands, September 2024.

C33. R. Azulay*, C. Combescure, and **J. Dirrenberger**. A Group-Theoretic Approach for Predicting Bifurcation Patterns in Architectured Materials. *17th U.S. National Congress on Computational Mechanics (USNCCM17)*, Albuquerque, USA, July 2023.

C32. R. Azulay*, C. Combescure, and **J. Dirrenberger**. Predicting bifurcation patterns in architectured materials - A group theoretic approach. *14th International Conference on the Mechanical Behaviour of Materials (ICM14)*, Santiago, Chile, July 2023.

C31. R. Azulay*, C. Combescure, and **J. Dirrenberger**. Predicting post-bifurcated patterns in architectured materials using group theory. *ECCOMAS Young Investigators Conference (YIC 2023)*, Porto, Portugal, June 2023.

C30. A.-E. Viard*, **J. Dirrenberger**, and S. Forest.Controlling the propagation of material instabilities through architecture. *7th International Conference on Material Modelling (ICMM7)*, Cape Town, South Africa, December 2022.

C29. R. Azulay*, C. Combescure, and **J. Dirrenberger**. Symmetry Groups of Post-bifurcated Honeycomb Structures. *11th European Solid Mechanics Conference (ESMC11)*, Galway, Ireland, July 2022.

C28. R. Azulay*, C. Combescure, and **J. Dirrenberger**. Symmetry Groups of Post-bifurcated Honeycomb Structures. *18th European Mechanics of Materials Conference (EMMC18)*, Oxford, United Kingdom, April 2022.

C27. A.-E. Viard*, **J. Dirrenberger**, and S. Forest. Propagating material instabilities in periodic media. *29th International Workshop on Computational Mechanics of Materials (IWCMM29)*, Dubrovnik, Croatia, September 2019.

C26. F. Ongaro*, K. Mathis, F. Masson, and **J. Dirrenberger**. Architectured materials for space applications: a computational tool for the parametric optimization of a three-dimensional lattice subjected to stiffness constraints. *8th European Conference for Aeronautics and Space Sciences (EUCASS 2019)*, Madrid, Spain, July 2019.

C25. A.-E. Viard*, **J. Dirrenberger**, and S. Forest. Propagating material instabilities in periodic media. *148th Annual Meeting and Exhibition TMS2019 Conference*, San Antonio, TX, USA, March 2019.

C24. P. Lapouge*, **J. Dirrenberger**, and M. Schneider. Architectured steel sheets through localized laser processing. *148th Annual Meeting and Exhibition TMS2019 Conference*, San Antonio, TX, USA, March 2019.

C23. **J. Dirrenberger**, S. Yang*, E. Monteiro, and N. Ranc. Representative volume element size determination for viscoplastic polycrystalline aggregates. *SES 2018 - 55th Annual Technical meeting*, Madrid, Spain, October 2018.

C22. **J. Dirrenberger**, F. Albertini*, C. Sollogoub, and A. Molotnikov. Architectured hybrid auxetic lattice structures. *IUTAM Symposium on Architectured Materials Mechanics*, Chicago, IL, USA, September 2018.

C21. N. Gaudillière, R. Duballet*, C. Bouyssou, A. Mallet, Ph. Roux, M. Zakeri, and **J. Dirrenberger**. Large-Scale Additive Manufacturing of Ultra-High-Performance Concrete of Integrated Formwork for Truss-Shaped Pillars. *ROB-ARCH 2018*, Zurich, Switzerland, September 2018.

C20. **J. Dirrenberger**, S. Yang*, E. Monteiro, and N. Ranc. Representative volume element size determination for viscoplastic polycrystalline materials. *10th European Solid Mechanics Conference*, Bologna, Italy, July 2018.

C19. **J. Dirrenberger**, S. Yang*, E. Monteiro, and N. Ranc. Representative volume element size determination for viscoplastic polycrystalline materials. *Engineering Mechanics Institute Conference 2018*, Cambridge, MA, USA, May 2018.

C18. **J. Dirrenberger**, S. Yang*, E. Monteiro, and N. Ranc. Representative Volume Element Size for Viscoplastic Properties in Polycrystalline Copper. *16th European Mechanics of Materials Conference*, Nantes, France, March 2018.

C17. S. Yang*, N. Ranc, E. Monteiro and **J. Dirrenberger**. Intrinsic dissipation process during very high cycle fatigue tests on pure Copper. *7th International Conference on Very High Cycle Fatigue*, Dresden, Germany, July 2017.

C16. **J. Dirrenberger**, Y. Qi, and A. Molotnikov. Bio-inspired architectured hybrid lattice structures. *5th International Conference on Material Modelling (ICMM5)*, Rome, Italy, June 2017.

C15. Z.P. Wang, L.H. Poh, **J. Dirrenberger**, Y. Zhu, and S. Forest. Designing Smoothed Petal Auxetic Structures Using Isogeometric Shape Optimization. *5th International Conference on Material Modelling*, Rome, Italy, June 2017.

C14. A. Bironeau*, **J. Dirrenberger**, C. Sollogoub, G. Miquelard-Garnier and S. Roland. Evaluation of morphologically representative sample sizes for nanolayered polymer blends. *15th European Mechanics of Materials Conference*, Brussels, Belgium, September 2016.

C13. **J. Dirrenberger**. Representative Volume Element Size Determination for Viscoplastic Properties in Polycrystalline Aggregates. *10th Mechanics of Time-Dependent Materials Conference*, Paris, France, May 2016.

C12. **J. Dirrenberger**, S. Forest and D. Jeulin. Towards Gigantic RVE sizes for 3D stochastic fibrous networks. *1st European-Latin-American Conference of Theoretical and Applied Mechanics*, La Havane, Cuba, February 2016.

C11. N. Auffray, G. Rosi and **J. Dirrenberger**. Wave propagation in the framework of strain gradient continua. *French-German workshop on Extended continuum theories for the numerically efficient modeling of multi-scale phenomena*, Ruhr-Universität Bochum, Germany, September 2015.

C10. **J. Dirrenberger**, S. Forest and D. Jeulin. Towards Gigantic RVE sizes for 3D stochastic fibrous networks. *9th European Solid Mechanics Conference*, Leganés-Madrid, Spain, July 2015.

C9. G. Rosi, N. Auffray and **J. Dirrenberger**. Wave Propagation in Hexachiral Lattices Modeled as Strain Gradient Continua. *9th European Solid Mechanics Conference*, Leganés-Madrid, Spain, July 2015.

C8. **J. Dirrenberger**. Representative Volume Element Size for Viscoplastic Properties in Face-Centered Cubic Metals. *4th International Conference on Material Modeling*, Berkeley, California, May 2015.

C7. **J. Dirrenberger**, L. Callen*, V. Favier and O. Castelnau. Computational Investigation of Micro-Macro Rate Sensitivity Equivalence in Polycrystalline Copper. *24th International Workshop on Computational Mechanics of Materials*, Madrid, Spain, October 2014.

C6. N. Gaudillière*, **J. Dirrenberger**, O. Baverel and C. Sollogoub. Additive Manufacturing for the Development of an Assembling System for Gridshells. *What's the Matter? Materiality and Materialism at the Age of Computation*, Barcelona, Spain, September 2014.

C5. **J. Dirrenberger**, L. Callen*, V. Favier and O. Castelnau. RVE size for viscoplastic properties in polycrystalline aggregates. *14th European Mechanics of Materials Conference*, Gothenburg, Sweden, August 2014.

C4. **J. Dirrenberger**, S. Forest and D. Jeulin. Statistical determination of RVE sizes and effective properties for stochastic fibrous networks. *6th European Congress on Computational Methods in Applied Sciences and Engineering*, Vienna, Austria, September 2012.

C3. **J. Dirrenberger**, S. Forest and D. Jeulin. Modelling of auxetic materials with periodic microstructure. *8th European Solid Mechanics Conference*, Graz, Austria, July 2012.

C2. **J. Dirrenberger**, S. Forest and D. Jeulin. Elastoplasticity of auxetic materials. *21st International Workshop on Computational Mechanics of Materials*, Limerick, Ireland, August 2011.

C1. **J. Dirrenberger**, S. Forest, D. Jeulin and C. Colin. Homogenization of periodic auxetic materials. *11th International Conference on Mechanical Behaviour of Materials*, Como, Italy, June 2011.

I National refereed conference lectures (5)

N5. **J. Dirrenberger**. Maîtriser le temps dans les matériaux architecturés. *Colloque IUF 2025 "Le Temps"*, Besançon, France, Juin 2025.

N4. **J. Dirrenberger**. Adaptive Spatial Lattice Manufacturing (ASLM) - A Novel Approach to Efficient and Sustainable Lattice Structure. *Journées annuelles de la SF2M*, Paris, France, November 2024.

N3. E. Ernault*, **J. Dirrenberger**, E. Richaud, and B. Fayolle. Embrittlement and stress-strain field induced by oxidation: case of epoxy amine networks. *32nd PDDG (Polymer Degradation Discussion Group) conference*, Taormina, Italy, September 2017.

N2. G. Rosi, N. Auffray and **J. Dirrenberger**. Wave propagation in the framework of strain gradient continua: the example of hexachiral materials. *22ème Congrès Français de Mécanique*, Lyon, France, August 2015.

N1. **J. Dirrenberger**, S. Forest and D. Jeulin. RVE size determination for 3D stochastic fibrous networks. *Journées Matériaux Numériques*, Loches, France, February 2013.

J Invited lectures (43)

S43. **J. Dirrenberger**. Les nouveaux procédés de fabrication. **Invited lecture**, *Café des Sciences*, Fontainebleau, France, May 2025.

S42. **J. Dirrenberger**. Architectured materials obtained through advanced manufacturing. **Invited lecture**, *UCLouvain*, Louvain-la-Neuve, Belgium, December 2024.

S41. **J. Dirrenberger**. Architectured materials obtained through advanced manufacturing. **Invited lecture**, *KIT*, Karlsruhe, Germany, December 2023.

S40. **J. Dirrenberger**. Architectured materials obtained through advanced manufacturing. **Invited lecture**, *Saint-Gobain Research*, Aubervilliers, France, November 2023.

S39. **J. Dirrenberger**. Architectured materials obtained through advanced manufacturing. **Invited lecture**, *Arizona State University-PIMM workshop, Arts & Métiers*, Paris, France, June 2023.

S38. **J. Dirrenberger**. Architectured materials enabled by digital fabrication. **Invited lecture**, *Building Minds Symposium on Artificial Intelligence & Computational Design, TU Delft*, Delft, Netherlands, May 2023.

S37. **J. Dirrenberger**. An overview of architectured materials at PIMM. **Invited lecture**, *Department of Civil Engineering, Czech Technical University*, Prague, Czech Republic, March 2023.

S36. A.-E. Viard, **J. Dirrenberger**, S. Forest. Controling the propagation of material instabilities through architecture. **Invited lecture**, *Department of Civil Engineering, Czech Technical University*, Prague, Czech Republic, March 2023.

S35. **J. Dirrenberger**. Recent highlights on architectured materials PIMM. **Invited lecture**, *Texas A&M University-Arts & Métiers workshop, Arts & Métiers*, Paris, France, January 2023.

S34. A.-E. Viard, **J. Dirrenberger**, S. Forest. Controling the propagation of plastic instabilities in planar architectured materials. **Invited lecture**, *WCPM, University of Warwick*, Warwick, UK, November 2020.

S33. A.-E. Viard, **J. Dirrenberger**, S. Forest. Controling the propagation of plastic instabilities in planar architectured materials. **Invited lecture**, *MSSMat, CentraleSupélec*, Gif-sur-Yvette, France, June 2020.

S32. A.-E. Viard, **J. Dirrenberger**, S. Forest. Controling the propagation of plastic instabilities in planar architectured materials. **Invited lecture**, *iMMC, Université Catholique de Louvain*, Louvain-la-Neuve, Belgium, November 2019.

S31. **J. Dirrenberger**. Vers une approche intégrée pour le développement de matériaux architecturés. **Invited lecture**, *IRDL laboratory*, Lorient, France, May 2019.

S30. **J. Dirrenberger**. Additive manufacturing for architectured materials. **Invited lecture** *Rencontres Franciliennes de Mécanique*, Dammarie-les-Lys, France, June 2018.

S29. F. dell'Isola, M. Spagnuolo, C. Dupuy, P. Peyre, and **J. Dirrenberger**. Pantographic structures, an example of collaboration between France and Italy. *Réseau National de Connaissances*, **Invited lecture**, Paris, France, February 2018.

S28. **J. Dirrenberger**, S. Forest, D. Jeulin, F. Willot, and M. Faessel. Representative Volume Element Size Determination for Elasticity & Viscoplasticity. **Invited lecture** *Colloque Mécamat 2018*, Aussois, France, January 2018.

S27. **J. Dirrenberger**. From architectured materials to the development of large-scale additive manufacturing. **Invited lecture** *UPEM*, Marne-la-Vallée, France, December 2017.

S26. **J. Dirrenberger**. Hybrid architectured materials: an example of fruitful collaboration between France and Australia. *AFRAN Forum*, **Invited keynote lecture**, Canberra, Australia, December 2017.

S25. **J. Dirrenberger**. The future of architectured materials: Opportunities for innovation and international collaboration. *EDTAS Advanced Materials & Manufacturing*, **Invited keynote lecture**, Melbourne, Australia, November 2017.

S24. **J. Dirrenberger**, Y. Qi, and A. Molotnikov. Preliminary results on the mechanical behavior of bioinspired hybrid architectured lattice structures. *Réseau National de Connaissances*, **Invited lecture**, Angers, France, June 2017.

S23. **J. Dirrenberger**. From architectured materials to the development of large-scale additive manufacturing. **Invited lecture** *TU Delft*, Delft, The Netherlands, November 2016.

S22. **J. Dirrenberger**. From architectured materials to the development of large-scale additive manufacturing. **Invited lecture** *ENS Paris-Saclay*, Cachan, France, November 2016.

S21. **J. Dirrenberger**, N. Auffray, M. Poncelet and G. Rosi. Approche holliste de la chiralité dans les métamatériaux architecturés. **Invited lecture** *Rencontres Franciliennes de Mécanique*, Dammarie-les-Lys, France, June 2016.

S20. **J. Dirrenberger**. Fabrication additive et grande échelle: le projet DEMOCRITE. **Invited lecture** *ENPC Alumni, Maison des Ponts*, Paris, France, May 2016.

S19. **J. Dirrenberger**. Architectured materials: A short overview. **Invited lecture** *National University of Singapore*, Singapore, April 2016.

S18. **J. Dirrenberger**. Modelling the plastic behaviour of auxetic materials. **Invited lecture** *Centre National d'Études Spatiales*, Paris, France, March 2016.

S17. **J. Dirrenberger**. Matériaux, computation et architectures. **Invited lecture** *École Nationale Supérieure d'Architecture Paris-Malaquais*, Paris, France, February 2016.

S16. **J. Dirrenberger**. Modelling the plastic behaviour of auxetic materials. **Invited lecture** *Unité de Mécanique, ENSTA-ParisTech*, Palaiseau, France, February 2016.

S15. **J. Dirrenberger**. Towards gigantic RVE sizes for 3D stochastic fibrous networks. **Invited lecture** *Laboratoire de Mathématique Nicolas Oresme, Université de Caen Basse-Normandie*, Caen, France, December 2015.

S14. A. Bironeau, **J. Dirrenberger**, C. Sollogoub, G. Miquelard-Garnier, S. Roland. Evaluation of morphologically representative sample sizes for nanolayered polymer blends. **Invited lecture** *Centre for Molecular and Macromolecular Studies, Polish Academy of Sciences*, Łódź, Poland, November 2015.

S13. **J. Dirrenberger**. Matériaux pour la construction durable. **Invited lecture**, *Séminaire du DPEA Architecture post-carbone, Ecole d'Architecture de la Ville et des Territoires*, Marne-la-Vallée, France, October 2015.

S12. **J. Dirrenberger**. Projet DEMOCRITE : Démonstrateur technologique pour une fabrication additive à grande échelle. **Invited lecture**, Salon *3D Print*, Lyon, France, September 2015.

S11. **J. Dirrenberger**. Possibilities offered by 3D printing for the development of architectured and metamaterials. **Invited lecture**, *International Workshop on Metamaterials*, Marne-la-Vallée, France, April 2015.

S10. **J. Dirrenberger**. Computation, robotique et impression 3D en ingénierie des matériaux. **Invited lecture**, *Ecole Supérieure des Beaux-Arts Tours Angers Le Mans*, Le Mans, France, April 2015.

S9. **J. Dirrenberger**, S. Forest, D. Jeulin. Towards gigantic RVE sizes for 3D stochastic fibrous networks. **Invited lecture**, *Séminaire du laboratoire MSME à l'Université Paris-Est*, Marne-la-Vallée, France, January 2015.

S8. **J. Dirrenberger**. From Materials Engineering to the Computational Development of Architectured Materials. **Invited lecture**, *Hyperbody Media Studies Lectures, TU Delft*, Delft, Netherlands, November 2014.

S7. **J. Dirrenberger**. Matériaux pour la construction durable. **Invited lecture**, *Séminaire du DPEA Architecture post-carbone, Ecole d'Architecture de la Ville et des Territoires*, Marne-la-Vallée, France, November 2014.

S6. **J. Dirrenberger**. L'impression 3D, un rendez-vous manqué ? **Invited lecture**, *Séminaire "Société de la connaissance et innovation", Master Affaires Publiques, SciencesPo*, Paris, France, April 2014.

S5. **J. Dirrenberger**. Introduction to architectured materials. **Invited lecture**, *Composite Chair Workshop, AA[n+1]Lab*, Paris, France, March 2014.

S4. **J. Dirrenberger**. Matériaux et construction durable. **Invited lecture**, *Séminaire du DPEA Architecture post-carbone, Ecole d'Architecture de la Ville et des Territoires*, Marne-la-Vallée, France, November 2013.

S3. **J. Dirrenberger**. Towards gigantic RVE sizes for 3D stochastic fibrous networks. **Invited lecture**, *Institut Jean Le Rond d'Alembert, Université Pierre et Marie Curie*, Paris, France, May 2013.

S2. **J. Dirrenberger**. Introduction to architectured materials. **Invited lecture**, *RFR Group*, Paris, France, March 2013.

S1. **J. Dirrenberger**. Introduction to architectured materials. **Invited lecture**, *The Bartlett School of Architecture, University College London*, London, UK, February 2013.

K Other oral communications (26)

L26. A.-E. Viard*, **J. Dirrenberger**, and S. Forest. Propagating material instabilities in periodic media. *Workshop on Nonlinear Instabilities and Localization in Materials*, Arpino, Italy, April 2019.

L25. **J. Dirrenberger**. Towards an integrated approach for the development of architectured materials. *Habilitation defense*, Paris, France, December 2018.

L24. **J. Dirrenberger**, S. Yang*, E. Monteiro, and N. Ranc. Representative volume element size determination for viscoplastic polycrystalline materials. *DGM workshop on micromechanics*, Wuppertal, Germany, December 2018

L23. R. Duballet*, O. Baverel, and **J. Dirrenberger**. Large-scale additive manufacturing and architecture. **Invited lecture** *Rencontres Franciliennes de Mécanique*, Dammarie-les-Lys, France, June 2018.

L22. **J. Dirrenberger**. XtreeE– the Large-Scale 3D-Printing company. *Ecole Nationale Supérieure d'Architecture de Paris-La Villette*, Paris, France, May 2017.

L21. **J. Dirrenberger**, S. Forest, D. Jeulin. Towards gigantic RVE sizes for 3D stochastic fibrous networks. *Monash University, Department of Materials Science*, Melbourne, Australia, December 2016.

L20. **J. Dirrenberger**. Modelling the behaviour of auxetic materials. *National University of Singapore*, Singapore, April 2016.

L19. **J. Dirrenberger**, G. Miquelard-Garnier, C. Sollogoub, S. Roland, P. Peyre, T. Gu, O. Castelnau, A. Guinault, G. Regnier. From nano- to macroscale applications: multiple processing routes for architectured materials. *Architectured Biomaterials, Medical and Tissue Engineering Symposium*, Berlin, Germany, December 2014.

L18. **J. Dirrenberger**. Matériaux architecturés par fabrication additive. *Séminaire de l'institut Carnot ARTS, ENSAM*, Paris, France, May 2014.

L17. **J. Dirrenberger**. Towards gigantic RVE sizes for 3D stochastic fibrous networks. *Séminaire du laboratoire PIMM à l'École Nationale Supérieure d'Arts et Métiers*, Paris, France, March 2014.

L16. **J. Dirrenberger**. Towards gigantic RVE sizes for 3D stochastic fibrous networks. *Journées "Problématiques multi-échelles dans les milieux fibreux" du GDR 3MF-Mécanique Multi-échelles des Milieux Fibreux*, Grenoble, France, June 2013.

L15. **J. Dirrenberger**, S. Forest and D. Jeulin. Effective thermal properties of 3D stochastic fibrous networks. *Workshop on Architectured Materials at Collège de France*, Paris, France, February 2013.

L14. **J. Dirrenberger**, S. Forest and D. Jeulin. RVE size determination for 3D stochastic fibrous networks. *Colloquium at Université Paris-Est*, Marne-la-Vallée, France, January 2013.

L13. **J. Dirrenberger**, S. Forest and D. Jeulin. Effective Properties of Architectured Materials: Periodic Auxetics and Stochastic Networks of Infinite Fibres. *Seminar at Centre des Matériaux, MINES-ParisTech*, Evry, France, June 2012.

L12. **J. Dirrenberger**, S. Forest and D. Jeulin. Homogenization methods for architectured materials. *Roundtable on architectured materials, MINES-ParisTech*, Paris, France, May 2012.

L11. **J. Dirrenberger**. Introduction to architectured materials. *Roundtable on architectured materials, MINES-ParisTech*, Paris, France, May 2012.

L10. **J. Dirrenberger**, S. Forest, D. Jeulin, M. Faessel and F. Willot. Etude de la taille du VER pour l'homogénéisation de milieux fibreux poissoniens. *Séminaire du département Mécanique et Matériaux, MINES-ParisTech*, Paris, France, Feb. 2012.

L9. **J. Dirrenberger**, S. Forest, D. Jeulin, M. Faessel and F. Willot. Effective properties of architectured materials. *Séminaire du groupe Comportement et Calcul de Structures, Centre des Matériaux, MINES-ParisTech*, Evry, France, Nov. 2011.

L8. **J. Dirrenberger**, S. Forest, D. Jeulin, C. Colin, J.-D. Bartout, M. Faessel and F. Willot. Effective properties of architectured materials. *ArchiMat 2011, 1st International School on Architectured Materials*, Autrans, France, May 2011.

L7. **J. Dirrenberger**, S. Forest, D. Jeulin, M. Faessel and F. Willot. Modélisation de milieux fibreux aléatoires enchevêtrés et estimation de VER. *Journées thématiques MECAMAT*, Sophia-Antipolis, France, May 2011.

L6. **J. Dirrenberger**, S. Forest, D. Jeulin, C. Colin, J.-D. Bartout and M. Faessel. Propriétés effectives des matériaux architecturés. *Colloque Mécamat 2011*, Aussois, France, Jan. 2011.

L5. **J. Dirrenberger** and S. Forest. Homogénéisation numérique de microstructures périodiques avec Zébulon/Z-Set. *Club Zébulon*, Evry, France, Dec. 2010.

L4. **J. Dirrenberger**, S. Forest and D. Jeulin. Propriétés effectives des matériaux architecturés : cas périodique et cas aléatoire. *École thématique CE2M10 "Changement d'échelles en mécanique des matériaux"*, Briançon, France, Aug. 2010.

L3. **J. Dirrenberger**, S. Forest, D. Jeulin and C. Colin. Propriétés mécaniques effectives des matériaux architecturés par simulation numérique massive et prototypage rapide. *Journées annuelles de la SF2M*, Paris, France, June 2010.

L2. **J. Dirrenberger**, S. Forest, F. N'Guyen and D. Jeulin. Modélisation de microstructures aléatoires et notion de volume élémentaire représentatif. *Colloque Mécamat 2010*, Aussois, France, Jan. 2010.

L1. **J. Dirrenberger**, K. Scrivener, S. Bishnoi and A. Guidoum. Effects of Particle Size Distribution on Mechanical Properties of Cement Paste at Early Age. *Junior EUROMAT 2008*, Lausanne, Switzerland, July 2008.

L Doctoral courses (2)

D2. **J. Dirrenberger**. Introduction to computational homogenization for fibrous media. *Models of Generalized Continua characterized by Quasi-Inextensible Fibrous Structures*, **Invited lecture**, Arpino, Italy, Septembre 2016.

D1. **J. Dirrenberger**, S. Forest, D. Jeulin. Towards gigantic RVE sizes for 3D stochastic fibrous networks. *Models of Generalized Continua characterized by Quasi-Inextensible Fibrous Structures*, **Invited lecture**, Arpino, Italy, Septembre 2016.

M Technical reports (6)

T6. **J. Dirrenberger**. Towards an integrated approach for the development of architectured materials. Habilitation thesis, *Sorbonne Université*, Paris, France, 2018. `https://hal.sorbonne-universite.fr/tel-02047005v1` (**3 citations**)

T5. **J. Dirrenberger**. Architectured material concepts for launcher-satellite damping connection. *CNES*, Paris, France, 2017.

T4. **J. Dirrenberger**. Effective properties of architectured materials. PhD thesis, *MINES-ParisTech*, Paris, France, 2012. `https://pastel.hal.science/pastel-00797363/fr/` (**25 citations**)

T3. **J. Dirrenberger** and S. Forest. Simulation et homogénéisation de microstructures périodiques. *Centre des Matériaux, MINES-ParisTech*, Evry, France, 2010.

T2. **J. Dirrenberger**. Durable Oil-Well Cement for Safe and Reliable CO_2 Storage. MSc thesis, *Université Paris-Sud XI*, Orsay, France, 2009.

T1. **J. Dirrenberger** and I. Khalfallah. Physico-chemical investigation of the carbonation reaction in oil-well cements for CO_2 storage application. Technical report, *Schlumberger Ltd.*, Clamart, France, 2009.