

Giulia Scalet  
Assistant Professor of Solid and Structural Mechanics  
Department of Civil Engineering and Architecture  
University of Pavia  
via Ferrata 3, 27100 Pavia (Italy)  
[giulia.scalet@unipv.it](mailto:giulia.scalet@unipv.it)  
<https://sites.google.com/view/giuliascalet>

## SHORT CURRICULUM VITAE

**Giulia Scalet** is *Assistant Professor* at the Department of Civil Engineering and Architecture of the University of Pavia (Italy) since 2019. She received a B.S. (2008) and a M.S. (2010) cum laude in *Civil Engineering* and a Ph.D. (2014) in *Civil and Environmental Engineering* from the University of Bologna (Italy). She has been a postdoctoral researcher at Ecole Polytechnique (France) and at the University of Pavia (Italy). She won the “**2020 Young Researchers**” prize in the **Engineering** sector by the 2003 Group for Scientific Research in 2020, the “**Best PhD Thesis in Computational Solid Mechanics**” Award by the Italian Group of Computational Mechanics in 2014, and the “**Best Graduated Women of the Engineering and Chemistry Faculties of the University of Bologna**” prize by Unindustria et al. in 2011. She visited several international institutions, among the others, the *Texas A&M University (US)*, the *University of Houston (US)*, and the *RWTH Aachen University (Germany)*. She is involved in successful projects financed by the *Italian Ministry of Education, University and Research, Lombardy Region*, and the *Italian Interuniversity Consortium of Materials Science and Technology* as well as she has been involved in collaborations with companies (e.g., SAES Getters, ENI Versalis). She is expert in material constitutive modeling, advanced computational mechanics for industrial applications, fatigue modeling. She published over 29 peer-reviewed papers, one book chapter, and several conference proceedings.

**LIST OF PUBLICATIONS** (for a complete list: <https://sites.google.com/view/giuliascalet/publications>)

1. **G. Scalet**. A convex hull based approach for multiaxial high cycle fatigue criteria, *Fatigue & Fracture of Engineering Materials & Structures*, 44(1), 14-27, 2021.
2. E. Sachyani Keneth, R. Lieberman, M. Rednor, **G. Scalet**, F. Auricchio, S. Magdassi, Multi-Material 3D Printed Shape Memory Polymer with Tunable Melting and Glass Transition Temperature Activated by Heat or Light, *Polymers*, 12(3), 710, 2020.
3. E. Sachyani Keneth, **G. Scalet**, M. Layani, G. Tibi, A. Degani, F. Auricchio, S. Magdassi, Pre-programmed Tri-layer Electro-Thermal Actuators Composed of Shape Memory Polymer and Carbon Nanotubes, *Soft Robotics*, 7(2), 123-129, 2020.
4. **G. Scalet**, Two-Way and Multiple-Way Shape Memory Polymers for Soft Robotics: An Overview, *Actuators*, 9(1), 10, 2020.
5. S. Pandini, N. Inverardi, **G. Scalet**, D. Battini, F. Bignotti, S. Marconi F. Auricchio, Shape memory response and hierarchical motion capabilities of 4D printed auxetic structures, *Mechanics Research Communications*, 103, 103463, 2020.
6. N. Inverardi, S. Pandini, F. Bignotti, **G. Scalet**, S. Marconi F. Auricchio, Sequential Motion of 4D Printed Photopolymers with Broad Glass Transition, *Macromolecular Materials and Engineering*, 305(1), 1900370, 2020.
7. A. Melocchi, M. Uboldi, N. Inverardi, F. Briatico-Vangosa, F. Baldi, S. Pandini, **G. Scalet**, F. Auricchio, M. Cerea, A. Foppoli, A. Maroni, L. Zema, A. Gazzaniga, Expandable drug delivery system for gastric retention based on shape memory polymers: Development via 4D printing and extrusion, *International Journal of Pharmaceutics*, 571, 118700, 2019.
8. **G. Scalet**, F. Niccoli, C. Garion, P. Chiggiato, C. Maletta, F. Auricchio. A three-dimensional phenomenological model for shape memory alloys including two-way shape memory effect and plasticity, *Mechanics of Materials*, 136, 103085, 2019.
9. **G. Scalet**, S. Pandini, M. Messori, M. Toselli, F. Auricchio. A one-dimensional phenomenological model for the two-way shape-memory effect in semi-crystalline networks, *Polymer*, 158, 130-148, 2018.
10. **G. Scalet**, C. Menna, A. Constantinescu, F. Auricchio. A computational approach based on a multiaxial fatigue criterion combining phase transformation and shakedown response for the fatigue

- life assessment of Nitinol stents, *Journal of Intelligent Material Systems and Structures*, 29(19), 3710-3724, 2018.
11. M. Peigney, **G. Scalet**, F. Auricchio. A time integration algorithm for a 3D constitutive model for SMAs including permanent inelasticity and degradation effects, *International Journal for Numerical Methods in Engineering*, 115(9), 1053-1082, 2018.
  12. **G. Scalet**. An efficient algorithm for the solution of min-max problems in multiaxial fatigue, *International Journal of Fatigue*, 112, 117-129, 2018.
  13. **G. Scalet**, F. Auricchio. Computational methods for elastoplasticity: an overview of conventional and less-conventional approaches, *Archives of Computational Methods in Engineering*, 25, 545-589, 2018.
  14. F. Auricchio, **G. Scalet**, P. Wriggers. Fiber-reinforced materials: finite elements for the treatment of the inextensibility constraint, *Computational Mechanics*, 1-18, 2017.
  15. **G. Scalet**, M. Conti, F. Auricchio. Computational Analysis of Advanced Shape-Memory Alloy Devices Through a Robust Modeling Framework, *Shape Memory and Superelasticity*, 3(2), 109-123, 2017.
  16. **G. Scalet**, M. Peigney. A robust and efficient radial return algorithm based on incremental energy minimization for the 3D Souza-Auricchio model for shape memory alloys, *European Journal of Mechanics - A/Solids*, 61, 364-382, 2017.
  17. E. Boatti, **G. Scalet**, F. Auricchio. A three-dimensional finite-strain phenomenological model for shape-memory polymers: formulation, numerical simulations, and comparison with experimental data, *International Journal of Plasticity*, 83, 153-177, 2016.
  18. R. Guerchais, **G. Scalet**, A. Constantinescu, F. Auricchio. Micromechanical modeling for the probabilistic failure prediction of stents in high cycle fatigue, *International Journal of Fatigue*, 87, 405-417, 2016.
  19. F. Auricchio, A. Constantinescu, C. Menna, **G. Scalet**. A shakedown analysis of high cycle fatigue of shape memory alloys, *International Journal of Fatigue*, 87, 112-123, 2016.
  20. F. Auricchio, A. Constantinescu, M. Conti, **G. Scalet**. Fatigue of Metallic Stents: From Clinical Evidence to Computational Analysis, *Annals of Biomedical Engineering*, 44(2), 287-301, 2016.
  21. **G. Scalet**, F. Auricchio, D.J. Hartl. Efficiency and Effectiveness of Implicit and Explicit Approaches for the Analysis of Shape Memory Alloy Bodies, *Journal of Intelligent Material Systems and Structures*, 27(3), 384-402, 2016.
  22. M. Ferraro, F. Auricchio, E. Boatti, **G. Scalet**, M. Conti, S. Morganti, A. Reali. An Efficient Finite Element Framework to Assess Flexibility Performances of SMA Self-Expandable Carotid Artery Stents, *Journal of Functional Biomaterials*, 6(3), 585-597, 2015.
  23. F. Auricchio, A. Constantinescu, M. Conti, **G. Scalet**. A computational approach for the lifetime prediction of cardiovascular balloon expandable stents, *International Journal of Fatigue*, 75, 69-79, 2015.
  24. **G. Scalet**, F. Auricchio, E. Bonetti, L. Castellani, D. Ferri, M. Pachera, F. Scavello. An experimental, theoretical and numerical investigation of shape memory polymers, *International Journal of Plasticity*, 67, 127-147, 2015 (featured in the SCIENCE DIRECT TOP 25 LIST of most downloaded articles - ranked 13th on the TOP 25 for IJP - April to June 2015).
  25. S. de Miranda, L. Molari, **G. Scalet**, F. Ubertini. A physically-based analytical relationship for practical prediction of leakage in longitudinally cracked pressurized pipes, *Engineering Structures*, 79, 142-148, 2014.
  26. F. Auricchio, A. Constantinescu, **G. Scalet**. Fatigue of 316L stainless steel notched  $\mu$ -size components, *International Journal of Fatigue*, 68, 231-247, 2014.
  27. F. Auricchio, E. Bonetti, **G. Scalet**, F. Ubertini. Theoretical and numerical modeling of shape memory alloys accounting for multiple phase transformations and martensite reorientation, *International Journal of Plasticity*, 59, 30-54, 2014 (featured in the SCIENCE DIRECT TOP 25 LIST of most downloaded articles - ranked 13th on the TOP 25 for IJP - April to June 2014).
  28. F. Auricchio, **G. Scalet**, M. Urbano. A Numerical/Experimental Study of Nitinol Actuator Springs. *Journal of Materials Engineering and Performance*, 23(7), 2420-2428, 2014.
  29. S. de Miranda, L. Molari, **G. Scalet**, F. Ubertini. Simple Beam Model to Estimate Leakage in Longitudinally Cracked Pressurized Pipes. *ASCE Journal of Structural Engineering*, 138(8), 1065-1074, 2012.

**LIST OF BOOK CHAPTERS** (for a complete list: <https://sites.google.com/view/giuliascalet/publications>)

1. **G. Scalet**, F. Auricchio. *Shape Memory Alloys: Constitutive Modeling and Engineering Simulations*, Chapter 2.6, [Alloys and Intermetallic Compounds: From Modeling to Engineering](#). Cristina Artini (ed.), CRC Press - Taylor & Francis Group - A Science Publishers Book , 2017.