



Antonio De Simone

The BioRobotics Institute
Scuola Superiore S.Anna
Viale Rinaldo Piaggio 34
56025 Pontedera (PI), ITALY

Tel.: +39 050 883420

e-mail: a.desimone@santannapisa.it

MathLab-Applied Math Laboratory
SISSA-International School for Advanced Studies
Via Bonomea 265
34136 Trieste, ITALY

Tel.: +39 040 3787 455

e-mail: desimone@sissa.it

home page: <https://people.sissa.it/~desimone/>

Education and employment

- Full professor of Mechanics of Solids and Structures at BioRobotics Institute, Scuola Superiore S.Anna, Pisa, since 20.12.2017
- Full professor of Mechanics of Solids and Structures at SISSA, Trieste, since 20.12.2002
- Director of the research group 'Multiscale Phenomena in Materials' at the Max Planck Institute for Mathematics in the Sciences (1998-2002)
- Ricercatore (assistant professor), Università di Roma *Tor Vergata* (1990-1998)
- Postdoctoral Associate, Dept. of Mathematics, Carnegie Mellon University (1993-1994)
- PhD in Mechanics, University of Minnesota, 1992
- Laurea (cum laude) in Ingegneria Civile, Università di Napoli *Federico II*, 1987

Research and publications

His research interests concern mathematical modelling of biological systems (e.g., motility of biological organisms and of bio-inspired robots), pattern formation driven by rough energy landscapes, mathematics-driven discovery of new material properties. This research is mostly based on theoretical and computational mechanics and on the calculus of variations.

He is author of 170+ peer-reviewed papers published on **multi-disciplinary** journals (Proceedings of the National Academy of Sciences USA, Proceedings of the Royal Society, Advanced Science, ...) and on specialist journals covering a broad spectrum of disciplines from **mathematics** (Archive Rat Mech Analysis, Calc Var and PDEs, SIAM J Math Analysis,...) to **physics** (Phys Rev Letters, Nature Physics, Phys Rev Fluids, ...), to **engineering** (J Mech Phys Solids, Macromolecules, Comp Methods in Applied Mechanics and Engineering, Advanced Materials, J Neural Engineering, Int J Nonlinear Mech, Int J Solids and Structures, IEEE Trans Biomedical Eng, ...). His H-index is 41 according to Scopus, and 50 according to Google Scholar.

Visiting positions and invited lectures

He has a broad international experience (visiting research appointments at University of Minnesota, Université Paris XIII, Joliot-Curie Chair at ESPCI Paris, Institute for Mathematics and its Applications-Minneapolis, Isaac Newton Institute for Mathematical Sciences-Cambridge), and has lectured in many leading universities in Italy, Europe (Cambridge, Oxford, Warwick, Ecole Polytechnique, Paris 6, 11, and 13, ESPCI, Universities of Bonn, Hannover, Stuttgart, Technical Universities of Berlin, Munich, Vienna, Lisbon, Universitat Politècnica de Catalunya; Charles University in Prague, University of Ljubljana), in the US (Caltech, UCLA, Harvard, MIT, Tufts, Courant Institute at NYU, Princeton, University of Pennsylvania, Penn State University), in Japan (Universities of Tokyo and Kyoto, Tohoku and Ochanomizu Universities), and China (Fudan and Shanghai Jiao-Tong Universities, Hong Kong University of Science and Technology).

Invited lecturer at CISM, Udine (Advanced School on 'Rank-one convexity, Quasiconvexity and Polyconvexity in Applied Mechanics', 2007; Advanced School on 'Mechanics and Electrodynamics of Magneto- and Electro-Elastic Materials', 2009; Advanced School on 'Variational Approaches to Damage', 2013; Advanced School on 'Computational Biomechanics - Advanced Models and Methods', 2020).

He has been invited to give courses on the 'Mechanics of cell motility' at the 36th Ravello Summer School of Mathematical Physics in 2011, at the Institut d'Etudes Scientifiques de Cargèse in 2012, and on 'The Mathematics of Mechano-Biology' at the Cetraro International Mathematical Summer Centre (CIME) in 2018.

Plenary lectures

He has been invited speaker at many international conferences, and plenary speaker at:

- UZI-SIP 2024 Joint national congress of the Italian Zoological Union and of the Italian Protistology Society, invited plenary speaker at the Symposium 'Beyond the boundaries of Zoology: multi-inter-trans-disciplinarity in Zoology', Pisa 2024.
- Coupled 2023, 10th International Conference on Coupled Problems in Science and Engineering, Chania (2023)
- ICTAM 2020, Sectional plenary lecturer in Solid Mechanics, Milano 2021
- 2019 Gordon Research Conference on Liquid Crystals, Discussion leader (USA, 2019)
- 11th European Conference on Mathematical and Theoretical Biology (Lisbon, 2018)
- 19th International Conference on Finite Elements in Flow Problems (Rome, FEF 2017)
- 5th Italian National Congress of Bioengineering (Naples 2016)
- SIAM Conference on Mathematical Aspects of Materials Science (Philadelphia, 2013)
- XI Congresso Nazionale SIMAI (Politecnico di Torino, 2012)
- 8th European Symposium on Martensitic Transformations (Prague, 2009)
- 7th Euromech Solid Mechanics Conference (Lisbon, 2009)
- GAMM2004 (Dresden, 2004)

Organization of scientific workshops and international conferences (selection)

- 5th African Conference on Computational Mechanics, Cape Town 2022 (member of the Scientific Committee)
- SIAM Conference on Mathematical Aspects of Materials Science, Bilbao 2021 (member of the

Scientific Committee)

- 25th Congress of the European Society of Biomechanics, Vienna 7-10 July 2019 (member of the Scientific Committee)
- MicroMotility2019: International workshop on biological motility and bio-inspired micro-robotics, Istituto Veneto di Scienze, Lettere e Arti, Venezia 25-29 March 2019
- CISM Advanced Schools on 'Mechanics of active and biological structures: from fundamentals to recent results' (2024), on 'Mechanobiology of the Cell: theory and experiments on the mechanics of life' (2018), on 'Mechanobiology of Cells and Tissues: Motility and Morphogenesis' (2014), on 'Brittle Fracture and Plastic Slip: from the Atomistic to the Engineering Scale' (2008).
- The first IEEE-RAS International Conference on Soft Robotics – RoboSoft 2018, Livorno, 24-28 April 2018 (co-chair of the interdisciplinary program)
- Euglena Day – A satellite workshop to IEEE-RAS RoboSoft 2018, Research Center on Sea Technologies and Marine Robotics, Livorno, 23 April 2018
- Annual European Rheology Conference 2018, Symposium on Living and Active Matter, Sorrento, 17-20 April 2018
- 14th International Conference on Free Boundary Problems (FBP2017), Shanghai Jiao Tong University, 9-14 July 2017 (member of the Scientific Committee)
- International Workshop on Mathematical Problems for Orientationally Ordered Soft Solids, BIRS-Casa Matematica Oaxaca, 5-9 September 2016
- International workshop on "Advances in the Mathematical Analysis of Material Defects in Elastic Solids", SISSA, Trieste, 6-10 June 2016
- 8th International Liquid Crystal Elastomer Conference and Workshop on Active Liquid Crystals and Gels (21st International School on Liquid Crystals). Centro di Cultura Scientifica Ettore Majorana, Erice (2015)
- Workshop on 'Solid and Active Liquid Crystals' organized within the programme 'Mathematics of Liquid Crystals', Isaac Newton Institute, University of Cambridge (2013)
- workshop series on "Material Theories" at the Mathematisches Forschungsinstitut Oberwolfach (2007, 2009, 2013, 2017)
- Workshop on 'Mathematics and Mechanics in the Search for New Materials', Banff International Research Station (2013)
- School and Workshop on 'Mathematics and Physics of Soft and Biological Matter', Abdus Salam International Center of Theoretical Physics, Trieste (2011)
- SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia (2008)
- workshops 'Young Researchers in the Mechanics of Materials and Structures' (2008-2014, yearly)

Awards and Honors

- Special grant from Istituto Nazionale dell'Alta Matematica INdAM F. Severi for research on 'Mathematical Challenges in Nanomechanics' (2006)
- Keith Medal of the Royal Society of Edinburgh (2007)
- Prix La Recherche for sustainable mobility (2010)
- Outstanding Paper Award from the Japanese Liquid Crystal Society (2011)
- Visiting Fellow, Newton Institute and Clare Hall (University of Cambridge, January-July 2013)
- Life member, Clare Hall, University of Cambridge (since 2013)
- Corresponding member of Accademia Pontaniana, scientific academy founded in Naples in 1458 (elected in 2013)
- Recipient of an ERC Advanced Grant (ERC-2013-AdG - 340685_Micro-Motility, 2014-2019) and of an ERC Proof of Concept Grant (Stripe-o-Morph, 2022-2024)
- EuroMech Fellow (elected in 2015)
- Visiting Fellow, Corpus Christi College (University of Cambridge, September 2017- August 2018)
- Joliot-Curie Chair at ESPCI, Paris (2018)
- Visiting Scholar, Pembroke College (University of Cambridge, January - July 2019)
- Humboldt-Forschungpreis (2019)
- Corresponding member of Istituto Veneto di Scienze Lettere e Arti, scientific academy founded in Venice in 1810 (elected in 2021)
- CISM Segretario Generale (elected in 2022)
- Elected member of the Italian Academy of Engineering and Technology (elected in 2024)
- ERC Starting Grant 2024: Chair of Panel PE8 (Process and Product Engineering)

Editorial Boards

- Applied Mathematics Research eXpress (2003-2012)
- Continuum Mechanics and Thermodynamics (2005-2012)
- SIAM Journal of Mathematical Analysis (2007-2012)
- Mathematical Problems in Engineering (2012-2013)
- Journal of Nonlinear Science (2012-2017)
- Networks and Heterogeneous Media (2005-2020)
- Acta Applicandae Mathematicae (2014-2022)
- International Journal of Nonlinear Mechanics (since 2014)
- Soft Robotics (since 2014, Associate Editor since 2024)
- Frontiers in Robotics and Artificial Intelligence (since 2018)
- Mathematics in Engineering (Editor-in-Chief) (since 2018)
- Meccanica (since 2021)
- Mechanics Research Communications (since 2021)
- Biomimetics (since 2024)

Service

- SISSA Director delegate for Technological Transfer (2008-2012)
- elected member to the SISSA Academic Senate (2012-2016)
- member of the Scientific Committee of the Consortium for Advanced Research on Naval Engineering of Friuli Venezia Giulia (Ditenave, renamed Mare^{TC} FVG in 2015)

- member of the Scientific Council of the International Center for Mechanical Sciences (CISM, Udine) (since 2012)
- member of the Italian ASN committee 08-B2 Scienza delle Costruzioni (National Scientific Habilitation to the roles of Associate Professor and Full Professor in the Mechanics of Solids and Structures) (2012-2014)
- member of the Commission de recrutement du département de Mécanique de l'Ecole Polytechnique, Palaiseau, France (2019-2021)
- member of the PE8 panel for the evaluation of ERC Starting Grant proposals (2020, 2022, 2024)

Research groups and laboratories

He has coordinated several multi-disciplinary research groups, listed below, and focusing on mathematical problems in the applied sciences (in particular, on the mechanics of materials and on the mechanics of biological systems). The approach used to pursue these problems has been to combine development and analysis of mathematical models, their numerical simulation, and the comparison of theoretical and numerical results with experimental evidence (either available from the collaboration with external laboratories, or acquired through in-house experimental activities).

- Independent research group on '**Multiscale Phenomena in Materials**' at Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany (from 1998 to 2002)
- **SISSA Mathlab**: the laboratory for Applied Mathematics at SISSA (<http://mathlab.sissa.it/>), Trieste (founder, 2010)
- **SAMBA**: laboratory for Sensing And Moving Bio-inspired Artifacts (<http://samba.sissa.it/>), Trieste (founder, 2012)
- **MENSA Observatory**: ModEling-and-Numerical-Simulation-Assisted laboratory at The BioRobotics Institute of Scuola Superiore Sant'anna, Pisa (founder, 2024).

Short Bio

Full Professor of Structural Mechanics at SISSA (Trieste) since 2002 and at Scuola Superiore Sant'Anna (Pisa) since 2017. He is co-author of more than 170 peer-reviewed papers on the mathematical modeling of cell motility, the mechanical properties of new materials, of soft and biological matter, of pattern formation driven by rough energy landscapes, electromagnetism and phase transformations. He has held research appointments at Carnegie Mellon University, University of Minnesota, Universite' Paris XIII, Max Planck Institute for Mathematics in the Sciences-Leipzig, Institute for Mathematics and its Applications-Minneapolis, Isaac Newton Institute for Mathematical Sciences and Engineering Department of the University of Cambridge, at ESPCI in Paris (Chaire Joliot-Curie). Plenary speaker at GAMM2004 (Dresden), 7th Euromech Solid Mechanics Conference (Lisbon, 2009), 8th European Symposium on Martensitic Transformations (Prague, 2009), SIAM Conference on Mathematical Aspects of Materials Science (Philadelphia, 2013), 11th European Conference on Mathematical and Theoretical Biology (Lisbon, 2018), ICTAM 2020 (Milano), Coupled 2023 (Chania). Lecturer on "Mechanics of cell motility" at GNFM Summer School of Mathematical Physics (Ravello, 2011), Institute d'Etudes Scientifiques (Cargese, 2012), CIME (Cetraro, 2018). Co-organizer of several international conferences. Recipient of the Keith Medal of the Royal Society of Edinburgh in 2007, Prix La Recherche in 2010, "Outstanding Paper Award" from the Japanese Liquid Crystal Society in 2011, Humboldt Forschungspreis in 2019, of an ERC Advanced Grant (2013) and an ERC Proof of Concept Grant (2022). Elected member of Accademia Pontaniana (Naples), of Istituto Veneto di Scienze Lettere e Arti (Venice), of Accademia Italiana di Ingegneria e Tecnologia (ItaTech), and Euromech Fellow since 2015. Member of the scientific committee of CISM, Udine, of the Advisory Committee on Liquid Crystal Elastomer Conferences, and member of the editorial board of several international journals.

LIST of PUBLICATIONS

Peer-reviewed journal articles and contributions to volumes:

1. R. Norouzkudiani, L. Teresi, A. DeSimone: Self-oscillations of submerged liquid crystal elastomer beams driven by light and self-shadowing. Submitted to *J. Elasticity* (2024).
2. F. Alouges, I. Anello, A. DeSimone, A. Lefevre-Lepot, J. Levillain: Some mathematical models for flagellar activation mechanisms. DOI:10.48550/arXiv.2409.03506
3. S. Weima, R. Norouzkudiani, J. Baek, J. Peixoto, T. Slot, D. Broer, A. DeSimone, D. Liu: Human Interactive Liquid Crystal Fiber Arrays. *Science Advances* 10, eadp0421 (2024).
4. P. Sartori, R.S. Yadav, J. Del Barrio, A. DeSimone, C. Sanchez Somolinos: Photochemically Induced Propulsion of a 4D Printed Liquid Crystal Elastomer Biomimetic Swimmer. *Advanced Science* 25, 2308561 (2024). Featured on the inside back cover.
5. G. Corsi, P.G. Ledda, G. Vagnoli, F. Gallaire, A. DeSimone: Instability and trajectories of buoyancy-driven annular disks: A numerical study. *Phys Rev Fluids* (2024).
6. J. Quaglierini, M. Arroyo, A. DeSimone: Mechanics of tubular meshes formed by elastic helical fibers. *Int J Solids Structures* 282, 112451 (2023).
7. E.O.H. Alameen, A. Lucantonio, A. DeSimone: Mechanics and transient morphing of soft hygroscopic bilayers. *Mech Res Comm* 131, 104131 (2023).
8. R. Norouzkudiani, A. Lucantonio, A. DeSimone: Equilibrium and transient response of photo-actuated Liquid Crystal Elastomer beams. *Mech Res Comm* 131, 104126 (2023).
9. J. Quaglierini, M. Arroyo, A. DeSimone: Mechanics of tubular meshes made of helical fibers and application to modeling McKibben artificial muscles. 2023 IEEE International Conference on Soft Robotics, *RoboSoft 2023* (2023).
10. T.E. Ebenezer et al.: Euglena International Network (EIN): Driving euglenoid biotechnology for the benefit of a challenged world. *Biology Open* 11(11) (2022).
11. A. Lolli, G. Corsi, A. DeSimone: Control and navigation problems for model bio-inspired microswimmers. *Meccanica* 57(10), 2431–2445 (2022).
12. L. Vanozzi, A. Lucantonio, A. Castillo, A. DeSimone, L. Ricotti: Modeling Self-Rollable Elastomeric Films for Building Bioinspired Hierarchical 3D Structures. *International Journal of Molecular Sciences*, 23(15), 8467 (2022).
13. O. Akouissi, S. Lacour, S. Micera, A. DeSimone: A finite element model of the mechanical interactions between peripheral nerves and intrafascicular implants. *J Neural Eng* 19(4),

046017 (2022).

14. A. Ippolito, A. DeSimone, V. Deshpande: Contact guidance as a consequence of coupled morphological evolution and motility of adherent cells. *Biomechanics and Modeling in Mechanobiology* 21(4), 1043–1065 (2022).
15. A. DeSimone, L. Teresi: Shape Control, Morphing and Mechanobiology. In: 50+ Years of AIMETA: A Journey Through Theoretical and Applied Mechanics in Italy, G. Rega (ed.), 477-494, Springer Nature (2022).
16. N. Giuliani, M. Hess, A. DeSimone, G. Rozza: MicroROM: An efficient and accurate reduced order method to solve many-query problems in micro-motility. *ESAIM: Mathematical Modelling and Numerical Analysis*, 56(4), 1151–1172 (2022).
17. V. Damioli, E. Zorzin, A. DeSimone, G. Noselli, A. Lucantonio: Transient shape morphing of active gel plates: geometry and physics. *Soft Matter* 18(31), 5867–5876 (2022).
18. B. Mazzolai et al.: Advancing environmental intelligence through novel approaches in soft bioinspired robotics and allied technologies: I-Seed project position paper for Environmental Intelligence in Europe. *ACM International Conference Proceeding Series*, 265–268 (2022).
19. V. Deshpande, A. DeSimone, R. McMeeking, P. Recho: Chemo-mechanical model of a cell as a stochastic active gel. *J Mech Phys Solids* 151, 104381 (2021).
20. H.E. Pettermann, C. Cheyrou, A. DeSimone: Modeling and simulation of anisotropic linear viscoelasticity: direction-dependent temperature-shift functions. *Mechanics of Time-Dependent Materials* 25(4), 679-689 (2021).
21. J. Quaglierini, A. Lucantonio, A. DeSimone: Mechanics of tubular helical assemblies: ensemble response to axial compression and extension. *Acta Mechanica Sinica* 37(2), 173-186 (2021).
22. G. Cicconofri, G. Noselli, A. DeSimone: The biomechanical role of extra-axonemal structures in shaping the flagellar beat of *Euglena gracilis*. *eLife* 10:e58610. DOI: <https://doi.org/10.7554/eLife.58610> (2021).
23. D. Agostinelli, G. Noselli, A. DeSimone: Nutations in growing plant shoots as a morphoelastic flutter instability. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences* 379(2201), 023102 (2021).
24. D. Agostinelli, A. DeSimone, G. Noselli: Nutations in Plant Shoots: Endogenous and Exogenous Factors in the Presence of Mechanical Deformations. *Frontiers in Plant Science* <https://doi.org/10.3389/fpls.2021.608005> (2021).
25. N. Giuliani, M. Rossi, G. Noselli, A. DeSimone: How *Euglena gracilis* swims: flow field reconstruction and analysis. *Phys Rev E* 103(2), 023102 (2021).

26. D. Riccobelli, G. Noselli, A. DeSimone, Rods coiling around a rigid constraint: helices and perversions. *Proc Roy Soc A* 477(2246), 20200796 (2021).
27. B. Mazzolai et al.: Towards new frontiers for distributed environmental monitoring based on an ecosystem of plant seed-like soft robots. *GoodIT 2021 - Proceedings of the 2021 Conference on Information Technology for Social Good*, 221–224 (2021).
28. T. Gao, E. Siefert, A. DeSimone, B. Roman: Shape programming by modulating actuation over hierarchical length scales. *Advanced Materials*, 32(47), 2004515 (2020). Featured on the front cover.
29. V. Agostiniani, A. DeSimone: Rigorous derivation of active plate models for thin sheets of nematic elastomers. *Mathematics and Mechanics of Solids* 25(10), 1804-1830 (2020).
30. D. Riccobelli, G. Noselli, M. Arroyo, A. DeSimone: Mechanics of axisymmetric sheets of interlocking and slidable rods. *J Mech Phys Solids* 141, 103969 (2020).
31. G. Gompper et al.: The 2020 motile active matter roadmap. *J Physics Condensed Matter* 32(19), 193001 (2020).
32. A. Lucantonio, A. DeSimone: Computational design of shape-programmable gel plates. *Mechanics of Materials* 144, 103313 (2020).
33. S. Tarantino, F. Clemente, A. DeSimone, C. Cipriani: Feasibility of tracking multiple implanted magnets with a myokinetic control interface: simulation and experimental evidence based on the point dipole model. *IEEE Transactions on Biomedical Engineering*, 67(5) 1282–1292, 8798691 (2020).
34. I. Cesini et al.: Seedless hydrothermal growth on ZnO nanorods as a promising route for flexible tactile sensors. *Nanomaterials* 10(5), 977 (2020).
35. A. Kuentler, Y. Chen, P. Bui, H. Kim, A. DeSimone, L. Jin, R. Hayward: Blueprinting photothermal shape- morphing of liquid crystal elastomers. *Advanced Materials* 32(17), 2000609 (2020).
36. D. Agostinelli, A. Lucantonio, G. Noselli, A. DeSimone: Nutations in growing plant shoots: the role of elastic deformations due to gravity loading. *J Mech Phys Solids* 136, 103702 (2020).
37. A. DeSimone: Cell motility and locomotion by shape control. *Springer Lecture Notes in Mathematics* 2260, 1-41 (2020).
38. H. Pettermann, H.E. Cheyrou, A. DeSimone: Modeling and simulation of anisotropic linear viscoelasticity: Direction dependent time–temperature-shift functions. *Mechanics of time-dependent materials* (2020).
39. G. Cicconofri, M. Arroyo, G. Noselli, A. DeSimone: Morphable structures from unicellular

organisms with active, shape-shifting envelopes: variations on a theme by Gauss. *Int. J. Nonlinear Mechanics* 118, 103278 (2020).

40. D. Ambrosi, M. Ben Amar, C. Cyron, A. DeSimone, A. Goriely, J. Humphrey, and E. Kuhl: Growth and remodelling of living tissues: perspectives, challenges and opportunities. *Journal of the Royal Society, Interface* 16 (157), 20190233 (2019).
41. A. Buskermolen, H. Suresh, S. Shishvan, A. Vigliotti, A. DeSimone, N. Kurniawan, C. Bouten, and V. Deshpande: Entropic forces drive cellular contact guidance. *Biophysical Journal*, 116, 1994-2008 (2019).
42. G. Corsi, A. DeSimone, C. Maurini, S. Vidoli: A neutrally stable shell in a Stokes flow: a rotational Taylor's sheet. *Proc Roy Soc London A*, 475(2227), 20190178 (2019).
43. F. Alouges, A. DeSimone, L. Girardi, Y. Or, O. Wiezel: Energy-optimal strokes for multi-link microswimmers: Purcell's loops and Taylor's waves reconciled. *New Journal of Physics*, 21, 043050 (2019).
44. G. Noselli, A. Beran, M. Arroyo, A. DeSimone: Swimming *Euglena* respond to confinement with a behavioral change enabling effective crawling. *Nature Physics*, 15, 496-502 (2019).
45. G. Noselli, M. Arroyo, A. DeSimone: Smart helical structures inspired by the pellicles of euglenids. *J. Mech Phys Solids* 123, 234-246 (2019).
46. G. Cicconofri, A. DeSimone: Modelling biological and bio-inspired swimming at microscopic scales: recent results and perspectives. *Computers & Fluids*, 179, 799-805 (2019).
47. D. Agostinelli, F. Alouges, A. DeSimone: Peristaltic waves as optimal gaits in metameric bio-inspired robots. *Frontiers in Robotics and AI*, 5, 99 (2018).
48. G. Fabris, A. Lucantonio, N. Hampe, A. DeSimone, R. Merkel: Nanoscale Topography and Poroelastic Properties of Model Tissue Breast Gland Basement Membranes. *Biophysical Journal*, 115(9), 1770-1782 (2018).
49. N. Caruso, A. Cvetkovic, A. Lucantonio, G. Noselli, A. DeSimone, Spontaneous morphing of equibiaxially pre-stretched elastic bilayers: The role of sample geometry. *Int J Mech Sci* 149, 481-486 (2018)
50. N. Giuliani, L. Heltai, A. DeSimone: Predicting and optimizing micro-swimmer performance from the hydrodynamics of its components: the relevance of interactions. *Soft Robotics*, 5(4), 410-424 (2018).
51. A. DeSimone: Spontaneous bending of pre-stretched bilayers. *Meccanica* 53(3), 511-518 (2018).

52. M. Rossi, G. Cicconofri, A. Beran, G. Noselli, A. DeSimone: Kinematics of flagellar swimming in *Euglena gracilis*: helical trajectories and flagellar shapes. Proceedings of the National Academy of Sciences USA 114(50), 13085-13090 (2017).
53. V. Agostiniani, A. DeSimone: Dimension reduction for soft active materials via Gamma-convergence. Meccanica 52(14), 3457-3470 (2017).
54. H. Pettermann, A. DeSimone: An anisotropic linear thermo-viscoelastic constitutive law: elastic relaxation and thermal expansion creep in the time domain. Mechanics of time-dependent materials, 22, 421-433 (2018).
55. P. Gidoni, A. DeSimone: On the genesis of directional friction through bristle-like mediating elements. ESAIM-Control Optimization and Calculus of Variations 23(3), 1023-1046 (2017).
56. F. Alouges, A. DeSimone, L. Giraldi, M. Zoppello: Purcell magnetoelastic swimmer controlled by an external magnetic field. IFAC-PapersOnLine 50(1), 4120-4125 (2017).
57. A. Montino, A. DeSimone: Dynamics and optimal actuation of a three-sphere low-Reynolds-number swimmer with muscle-like arms, Acta Applicandae Mathematicae 149(1), 53-86 (2017).
58. A. Lucantonio, G. Tomassetti, A. DeSimone: Large-strain poroelastic plate theory for polymer gels with applications to swelling-induced morphing of composite poroelastic plates. Composites Part B: Engineering 115, 330-340 (2017).
59. L. Heltai, J. Kiendl, A. DeSimone, A. Reali: A natural framework for isogeometric fluid-structure interaction based on BEM-shell coupling. Comp Meth Appl Mech Engng 316, 522-546 (2017).
60. V. Agostiniani, A. DeSimone, K. Koumatos: Shape programming for narrow ribbons of nematic elastomers. J Elasticity 127(1), 1-24 (2017).
61. P. Gidoni, A. DeSimone: Stasis domains and slip surfaces in the locomotion of a bio-inspired two-segment crawler. Meccanica 52(3), 587-601 (2017).
62. A. Lucantonio, A. DeSimone: Coupled swelling and nematic reordering in liquid crystal gels. Soft Matter 13(43), 7907-7917 (2017).
63. N. Caruso, A. Cvetkovic, A. Lucantonio, G. Noselli, A. DeSimone: Spontaneous morphing of equibiaxially pre-stretched elastic bilayers: the role of sample geometry. Int Journal Mechanical Sciences (in press, 2017).
64. V. Agostiniani, A. DeSimone: Rigorous derivation of active plate models for thin sheets of nematic elastomers. Mathematics and Mechanics of Solids (in press, 2017).
65. G. Noselli, A. Lucantonio, R. McMeeking, A. DeSimone: Poroelastic toughening in

polymer gels: A theoretical and numerical study. *J. Mech Phys Solids* 94, 33-46 (2016).

66. G. Cicconofri, A. DeSimone: Motion planning and motility maps for flagellar microswimmers. *European Physical Journal E* 39(7), 72 (2016).
67. M. de Luca, A. DeSimone: Elastomeric gels: a model and first results. *Lecture Notes in Applied and Computational Mechanics* 81(5), 59-89 (2016).
68. A. Lucantonio, L. Teresi, A. DeSimone: Continuum theory of swelling material surfaces with applications to thermo-responsive gel membranes and surface mass transport. *J. Mech Phys Solids* 89, 96-109 (2016).
69. G. Cicconofri, A. DeSimone: Motion planning and motility maps for flagellar microswimmers. *European Physical Journal E* 39(7), 72 (2016).
70. A. Lucantonio, G. Noselli, X. Trepas, M. Arroyo, A. DeSimone: Hydraulic fracture and toughening of a brittle layer bonded to a hydrogel. *Physical Review Letters* 115, 188105 (2015).
71. F. Alouges, A. DeSimone, L. Giraldo, M. Zoppello: Can magnetic multilayers propel artificial microswimmers mimicking sperm cells? *Soft Robotics* 2, 117–128 (2015).
72. G. Cicconofri, A. DeSimone: Snake-like locomotion through the analysis of a flexible robot model. *Proc Roy Soc London A*, 471 (2184), 20150054 (2015).
73. A. Montino, A. DeSimone: Three-sphere low Reynolds number swimmer with a passive elastic arm. *Eur Phys J E* 38, 42 (2015).
74. A. DeSimone, P. Gidoni, G. Noselli: Liquid crystal elastomer strips as soft crawlers. *J Mech Phys Solids* 84, 254-272 (2015).
75. G. Cicconofri, A. DeSimone: Motility of a model bristle-bot: a theoretical analysis. *Int J Nonlinear Mech* 76, 233-239 (2015).
76. V. Agostiniani, G. Dal Maso, A. DeSimone: Attainment results for nematic elastomers. *Proc. Roy. Soc. Edinburgh A* 145, 669-701 (2015)
77. M. Barchiesi, A. DeSimone: Frank energy for nematic elastomers: a nonlinear model. *ESAIM Control Optimization and Calculus of Variations* 21, 372-377 (2015)
78. G. Dal Maso, A. DeSimone, M. Morandotti: One-dimensional swimmers in viscous fluids: dynamics, controllability, existence of optimal controls. *ESAIM Control Optimization Calculus of Variations* 21, 190-216 (2015)
79. L. Giomi, A. De Simone: Spontaneous division and motility in active nematic droplets. *Physical Review Letters* 112, 147802 (2014). Featured on the front cover.

80. M. Arroyo, A. DeSimone: Shape control of active surfaces inspired by the movement of euglenids. *J. Mech Phys Solids* 62, 99–112 (2014)
81. L. Heltai, M. Arroyo, A. DeSimone: Nonsingular Isogeometric Boundary Element Method for Stokes Flows in 3D. *Comp Meth Appl Mech Engng* 268, 514-539 (2014)
82. M.C. Calderer, A. DeSimone, D. Golovaty, A. Panchenko: An effective model for nematic liquid crystal composited with ferromagnetic inclusions. *SIAM J Appl Math* 74, 237-262 (2014)
83. M. Rahimi, A. DeSimone, M. Arroyo: Curved fluid membranes behave laterally as effective viscoelastic media. *Soft Matter* 9, 11033-11045 (2013)
84. F. Alouges, A. DeSimone, L. Heltai, A. Lefebvre, B. Merlet: Optimally swimming stokesian robots. *Discrete and Continuous Dynamical Systems B*, Vol. 18, pp. 1189–1215 (2013).
85. M. de Luca, M. Copic, A. Petelin, A. DeSimone: Sub-stripe pattern formation in Liquid Crystal Elastomers: Experimental observations and numerical simulations. *J. Mech. Phys. Solids* 61, 2161-2177 (2013).
86. A. DeSimone, F. Guarnieri, G. Noselli, A. Tatone: Crawlers in viscous environments: linear vs. nonlinear rheologies. *International J. Nonlinear Mechanics* 56, 142–147 (2013).
87. R. Conti, C. Tamagnini, A. DeSimone: Critical softening in Cam-Clay plasticity: Adaptive viscous regularization, dilated time and numerical integration across stress–strain jump discontinuities. *Comput. Methods Appl. Mech. Engrg.*, Vol. 258, pp. 118-133 (2013).
88. A. DeSimone, M. Kruzik: Domain patterns and hysteresis in phase-transforming solids: analysis and numerical simulations of a sharp interface dissipative model via phase-field approximation. *Networks and Heterogeneous Media*, Vol. 8, pp. 481–499 (2013).
89. S. Cacace, A. Chambolle, A. DeSimone, L. Fedeli: Macroscopic contact angle and liquid drops on rough solid surfaces via homogenization and numerical simulations. *M2AN Math. Model. Numer. Anal.*, Vol. 47, pp. 837–858 (2013).
90. F. Alouges, A. DeSimone, L. Giraldi, M. Zoppello: Self-propulsion of slender micro-swimmers by curvature control: N-link swimmers. *International J. Nonlinear Mechanics* 56, 132-141 (2013).
91. A. Mola, L. Heltai, A. DeSimone: A stable and adaptive semi-Lagrangian potential model for unsteady and nonlinear ship-wave interactions. *Engineering Analysis with Boundary Elements*, Vol. 37, pp. 128–143 (2013).
92. M. Arroyo, L. Heltai, D. Milan, A. DeSimone: Reverse engineering the euglenoid movement. *Proc. National Academy of Sciences USA* 109, 17874–17879 (2012).
93. A. DeSimone, A. Tatone: Crawling motility through the analysis of model locomotors:

two case studies. *Europ. Phys. Journal E*, Vol. 35, article number 85 (2012).

94. V. Agostiniani, A. DeSimone: Ogden-type energies for nematic elastomers. *International J. of Nonlinear Mechanics*, Vol. 47, pp. 402–412 (2012).
95. V. Agostiniani, G. Dal Maso, A. DeSimone: Linear elasticity from finite elasticity by Gamma-convergence under weak coerciveness conditions. *Annales de l'Institut Henri Poincaré / Analyse non linéaire*, Vol. 29, pp. 715–735 (2012).
96. A. Bosco, F. Bano, P. Parisse, L. Casalis, A. DeSimone, C. Micheletti: Hybridization in nanostructured DNA monolayers probed by AFM: theory versus experiment. *Nanoscale*, Vol. 4, pp. 1734–1741 (2012).
97. G. Dal Maso, A. DeSimone, F. Solombrino: Quasistatic evolution for Cam-Clay plasticity: properties of the viscosity solution. *Calc. Var.*, Vol. 44, pp. 495–541 (2012).
98. L. Cardamone, A. Laio, R. Shahapure, V. Torre, A. DeSimone: Cytoskeletal actin networks in motile cells are critically self-organized systems synchronized by mechanical interactions. *Proc. National Academy of Sciences USA* 108, 13978–13983 (2011).
99. G. Dal Maso, A. DeSimone, M. Morandotti: An existence and uniqueness result for the motion of self-propelled microswimmers. *SIAM J. Math. Anal.*, Vol. 43, pp. 1345–1368 (2011).
100. L. Fedeli, A. Turco, A. DeSimone: Metastable equilibria of capillary drops on solid surfaces: a phase field approach. *Cont. Mech. Thermodyn.*, Vol. 23, pp. 453–471 (2011).
101. G. Alberti, A. DeSimone: Quasistatic evolution of sessile drops and contact angle hysteresis. *Arch. Rat. Mech. Anal.*, Vol. 202, pp. 295–348 (2011).
102. V. Agostiniani, A. DeSimone: Gamma-convergence of energies for nematic elastomers in the small strain limit. *Cont. Mech. Thermodyn.*, Vol. 23, pp. 257–274 (2011).
103. P. Cesana, A. DeSimone: Quasiconvex envelopes of energies for nematic elastomers in the small strain regime and applications. *J. Mech. Phys. Solids*, Vol. 59, pp. 787–803 (2011).
104. F. Alouges, A. DeSimone, L. Heltai: Numerical strategies for stroke optimization of axisymmetric microswimmers. *Math. Models Methods Appl. Sci.*, Vol. 21, pp. 361–397 (2011).
105. G. Dal Maso, A. DeSimone, F. Solombrino: Quasistatic evolution for Cam-Clay plasticity: a weak formulation via viscoplastic regularization and time rescaling. *Calc. Var.*, Vol. 40, pp. 125–181 (2011).
106. A. DeSimone: Electro-Mechanical Response of Nematic Elastomers: an Introduction. *CISM Courses and Lectures 527*, R.W. Ogden and L. Dorfmann eds, pp. 231–266,

Springer Verlag 2011.

107. A. DeSimone: Nematic Elastomers: modeling, analysis, and numerical simulation. CISM Courses and Lectures 516, P. Neff and J. Schroeder eds, Springer Verlag 2010.
108. Y. Sawa, K. Urayama, T. Takigawa, A. DeSimone, L. Teresi: Thermally Driven Giant Bending of Liquid Crystal Elastomer Films with Hybrid Alignment. *Macromolecules*, Vol. 43, pp. 4362–4369 (2010). Outstanding paper award from the Japanese Liquid Crystal Society.
109. A. DeSimone, L. Fedeli, A. Turco: A phase field approach to wetting and contact angle hysteresis phenomena. IUTAM Symposium on Variational Concepts with Applications to the Mechanics of Materials, K. Hackl ed., IUTAM Bookseries 21, pp. 51–63, Springer Verlag 2010.
110. A. Turco, F. Alouges, A. DeSimone: Wetting on rough surfaces and contact angle hysteresis: numerical experiments based on a phase field model. *M2AN Math. Model. Numer. Anal.*, vol. 43, pp. 1027–1044 (2009).
111. M. Cicalese, A. DeSimone, C. Zeppieri: Discrete-to-continuum limits for strain-alignment-coupled systems: magnetostrictive solids, ferroelectric crystals and nematic elastomers. *Netw. Heterog. Media*, vol. 4, pp. 667–708 (2009).
112. G. Dal Maso, A. DeSimone: Quasistatic evolution for Cam-Clay plasticity: examples of spatially homogeneous solutions. *Math. Models Methods Appl. Sci.*, vol. 19, pp. 1643–1711 (2009).
113. A. DeSimone, L. Teresi: Elastic energies for nematic elastomers. *European Physical Journal E*, vol. 29, pp. 191–204 (2009).
114. P. Cesana, A. DeSimone: Strain-order coupling in nematic elastomers: equilibrium configurations. *Math. Models Methods Appl. Sci.*, Vol. 19, pp. 601–630 (2009).
115. M. Arroyo, A. DeSimone: Relaxation dynamics of fluid membranes. *Phys. Rev. E*, Vol. 79, pp. 031915-1-17 (2009). Selected for publication in the April 1, 2009 issue of *Virtual Journal of Biological Physics Research*.
116. F. Alouges, A. DeSimone, A. Lefebvre: Optimal strokes for low Reynolds number axisymmetric swimmers. *Eur. Phys. J. E*, Vol. 28, pp. 279–284 (2009).
117. A. DeSimone, F. Alouges, A. Lefebvre: Biological Fluid Dynamics. In: Springer Encyclopedia of Complexity and Systems Science, R.A. Meyers (ed.) Springer, (2009).
118. A. Fukunaga, K. Urayama, T. Takigawa, A. DeSimone, L. Teresi: Dynamics of electro-opto-mechanical effects in swollen nematic elastomers. *Macromolecules*, Vol. 41, pp. 9389–9396 (2008).

119. F. Alouges, A. DeSimone, A. Lefebvre: Optimal strokes for low Reynolds number swimmers: an example. *J. Nonlinear Sci.*, vol. 18, pp. 277–302 (2008).
120. G. Dal Maso, A. DeSimone, M.G. Mora, M. Morini: A vanishing viscosity approach to quasistatic evolution problems in plasticity with softening. *Archive for Rational Mechanics and Analysis*, vol. 189, pp. 469–544 (2008).
121. G. Dal Maso, A. DeSimone, M.G. Mora, M. Morini: Globally stable quasistatic evolution in plasticity with softening. *Netw. Heterog. Media*, vol. 3, pp. 567–614 (2008).
122. J. Adams, S. Conti, A. DeSimone, G. Dolzmann: Relaxation of some transversally isotropic energies and applications to smectic-A elastomers. *Math. Models Methods Appl. Sci.*, vol. 18, pp. 1–20, (2008).
123. A. DeSimone, A. DiCarlo, L. Teresi: Critical voltages and blocking stresses in nematic gels. *European Physical Journal E*, vol. 24, pp. 303–310 (2007).
124. A. DeSimone, N. Grunewald, F. Otto: A new model for contact angle hysteresis. *Netw. Heterog. Media*, vol. 2, pp. 211–225 (2007).
125. G. Dal Maso, A. Demyanov, A. DeSimone: Quasistatic evolution problems for pressure-sensitive plastic materials. *Milan J. Mathematics*, vol. 75, pp. 117–134 (2007).
126. J. Adams, S. Conti, A. DeSimone: Soft elasticity and microstructure in smectic C elastomers. *Contin. Mech. Thermodyn.* vol. 18, pp.319–334, (2007).
127. G. Dal Maso, A. DeSimone, M.G. Mora, M. Morini: Time-dependent systems of generalized Young measures. *Netw. Heterog. Media*, vol. 2, pp. 1–36 (2007).
128. A. DeSimone, R.V. Kohn, S. Müller, F. Otto: Recent Analytical Developments in Micromagnetics. In: *The Science of Hysteresis* (G. Bertotti, I. Mayergoyz eds.), Vol. 2, pp. 269–381, Elsevier 2006.
129. G. Dal Maso, A. DeSimone, M.G. Mora: Quasistatic Evolution Problems for Linearly Elastic–Perfectly Plastic Materials. *Archive for Rational Mechanics and Analysis*, vol. 180, pp. 237–291, (2006).
130. A. DeSimone, H. Knüpfer, F. Otto: 2D–stability of Néel walls. *Calc. Var. Partial Differential Equations*, vol. 27, pp. 233–253 (2006).
131. A. DeSimone, G. Dolzmann: Striping in nematic elastomers: old and new. In: *Modeling of Soft Matter* (M.C. Calderer, E. Terentjev eds.), IMA Volumes in Mathematics and its Applications, vol. 141, Springer 2005.
132. A. DeSimone, C. Tamagnini: Stress–dilatancy based modelling of granular materials and extensions to soils with crushable grains. *International Journal for Numerical and Analytical Methods in Geomechanics*, Vol. 29, p. 73–101 (2005).

133. G. Alberti, A. DeSimone: Wetting of rough surfaces: a homogenization approach. *Proceedings of the Royal Society of London A*, Vol. 461, p. 79–97 (2005).
134. S. Conti, A. DeSimone, S. Müller: Self-similar folding patterns and energy in compressed elastic sheets. *Computer Methods in Applied Mechanics and Engineering*, Vol. 194, p. 2534–2549 (2005).
135. A. DeSimone: Traction boundary conditions in the presence of dipolar interactions. *Rendiconti Lincei*, Vol. 210, p. 89–96 (2005).
136. F. Alouges, S. Conti, A. DeSimone, Y. Pokern: Energetics and switching of quasi-uniform states in small ferromagnetic particles. *M2AN Math. Model. Numer. Anal.*, Vol. 38, p. 235–248 (2004).
137. A. DeSimone: Coarse-grained models of materials with non-convex free-energy: two case-studies. *Computer Methods in Applied Mechanics and Engineering*, Vol. 193, p. 5129–5141 (2004).
138. A. Bogdanov, A. DeSimone, S. Müller, U.K. Rößler: Phenomenological theory of magnetic-field-induced strains in ferromagnetic shape-memory materials. *Journal of Magnetism and Magnetic Materials*, Vol. 261, p. 204–209 (2003)
139. A. DeSimone, R.V. Kohn, S. Müller, F. Otto: Repulsive interaction of Néel walls, and the internal length scale of the cross-tie wall. *Multiscale Modelling and Simulation*, Vol. 1, p. 57–104 (2003).
140. A. DeSimone, R.D. James: Energetics of magnetoelastic domains in ferromagnetic shape memory alloys. *J. Phys. IV France*, Vol.112, p. 969–972 (2003).
141. A. DeSimone: Pulling phase-transforming bars: a three-dimensional viewpoint. In: *IUTAM Symposium on Computational Mechanics of Solid Materials at Large Strains*, (C. Miehe ed.), Kluwer, 2003.
142. S. Conti, A. DeSimone, G. Dolzmann, S. Müller, F. Otto: Multiscale Problems in Materials: The Role of Analysis. In: *Trends in Nonlinear Analysis*, (M. Kirkilionis, S. Krömker, R. Rannacher, F. Tomi eds.), pp. 375–408, Springer-Verlag, 2003.
143. M. Pasquale, C.P. Sasso, G. Bertotti, V. L'vov, V. Chernenko, A. DeSimone: Analysis of mechanical and magnetic instabilities in Ni-Mn-Ga single crystals. *J. Appl. Phys.*, Vol.93, p. 8641–8643 (2003).
144. S. Conti, A. DeSimone, G. Dolzmann: Semi-soft elasticity and director reorientation in stretched sheets of nematic elastomers. *Physical Review E*, Vol. 60, p. 61710-1–8 (2002).
145. M. Cecconi, A. DeSimone, C. Tamagnini, G.M.B. Viggiani: A constitutive model for granular materials with grain crushing. *International Journal of Numerical and Analytical*

Methods in Geomechanics, Vol. 26, p. 1531–1560 (2002).

146. R. Schäfer, A. DeSimone: Hysteresis in soft ferromagnetic films. *IEEE Transactions on Magnetics*, Vol. 38, p. 2391–2393 (2002).
147. H. Ben Belgacem, S. Conti, A. DeSimone, S. Müller: Energy scaling of compressed elastic films, *Archive for Rational Mechanics and Analysis*, Vol. 164, p. 1–37 (2002).
148. A. DeSimone, R.V. Kohn, S. Müller, F. Otto: A reduced theory for thin-film micromagnetics. *Communications in Pure and Applied Mathematics*, Vol. 55, p. 1408–1460 (2002).
149. G. Gioia, A. DeSimone, M. Ortiz, A. Cuitino: Folding Energetics in Thin-Film Diaphragms. *Proceedings of the Royal Society A*, Vol. 458, p. 1223 (2002).
150. A. DeSimone, R.V. Kohn, S. Müller, F. Otto, R. Schäfer: Low energy domain patterns in soft ferromagnetic films. *Journal of Magnetism and Magnetic Materials*, Vol. 242–245, p. 1047 (2002).
151. S. Conti, A. DeSimone, G. Dolzmann: Soft elastic response of stretched sheets of nematic elastomers: a numerical study. *Journal of the Mechanics and Physics of Solids*, Vol. 50, p. 1431 (2002).
152. A. DeSimone, G. Dolzmann: Macroscopic response of nematic elastomers via relaxation of a class of $SO(3)$ -invariant energies. *Archive for Rational Mechanics and Analysis*, vol. 161, p. 181 (2002).
153. A. DeSimone, R.D. James: A constrained theory of magnetoelasticity. *Journal of the Mechanics and Physics of Solids*, vol. 50, p. 283 (2002).
154. A. DeSimone, J.J. Marigo, L. Teresi: The Mullins effect in rubbers from the point of view of damage mechanics. *European Journal of Mechanics A*, vol. 20, p. 873 (2001).
155. A. DeSimone, R.V. Kohn, S. Müller, F. Otto, R. Schäfer: Two-dimensional modeling of soft ferromagnetic films. *Proceedings of the Royal Society A*, Vol. 457, p. 2983 (2001).
156. A. DeSimone, R.V. Kohn, S. Müller, F. Otto: A compactness results in the gradient theory of phase transitions. *Proceedings of the Royal Society of Edinburgh A*, Vol. 131, p. 833 (2001). Keith Medal from the Royal Society of Edinburgh.
157. H. Ben Belgacem, S. Conti, A. DeSimone, S. Müller: Rigorous bounds for the Foeppel-von Karman theory of isotropically compressed plates. *Journal of Nonlinear Science*, Vol. 10, p. 661 (2000).
158. A. DeSimone, R.V. Kohn, S. Müller, F. Otto: Magnetic microstructures—a paradigm of multiscale problems. In: *ICIAM 99*, (J.M. Ball and J.C.R. Hunt eds.), p. 175, Oxford University Press (2000).

159. A. DeSimone, G. Dolzmann: Material instabilities in nematic elastomers. *Physica D*, Vol. 136, p. 175 (2000).
160. K. Bhattacharya, A. DeSimone, K. F. Hane, R. D. James, C. J. Palmstrom: Tents and tunnels on martensitic films. *Materials Science and Engineering A*, Vol. 273, p. 685-689 (1999).
161. F. Alouges, A. DeSimone: Plastic torsion and related problems. *Journal of Elasticity*, Vol. 55, p. 231 (1999).
162. A. DeSimone: Energetics of fine domain structures. *Ferroelectrics*, Vol. 222, p. 275 (1999).
163. A. DeSimone, G. Dolzmann: Existence of minimizers for a variational problem in 2-D nonlinear magnetoelasticity, *Archive for Rational Mechanics and Analysis*, Vol. 144, p. 107 (1998).
164. A. DeSimone, P. Podio-Guidugli: Pointwise balances and the construction of stress fields in dielectrics. *Mathematical Models and Methods in Applied Sciences*, Vol. 7(4), p. 477 (1997).
165. A. DeSimone, R.D. James: A theory of magnetostriction oriented towards applications. *Journal of Applied Physics*, Vol. 81(8), p. 5706 (1997).
166. A. DeSimone, G. Friesecke: On the problem of two linearized wells. *Calculus of Variations*, Vol. 4, p. 293 (1996).
167. A. DeSimone: Characterization of the macroscopic response of magnetostrictive materials via microstructural analysis. *Zeitschrift fur Angewandte Mathematik und Mechanik*, Vol. 79(S2), p. 397 (1996).
168. A. DeSimone, P. Podio-Guidugli: On the continuum theory of deformable ferromagnetic solids. *Archive for Rational Mechanics and Analysis*, Vol. 136, p. 201 (1996).
169. A. DeSimone: The effect of applied loads on the magnetostrictive response of a Terfenol-D-type material: a micromagnetic analysis. *Scripta Metallurgica*, Vol. 33, p. 1869 (1995).
170. S. Bobbio, A. DeSimone, G. Marrucci: Forces, Stresses and Energies in Polarized Solids. *Il Nuovo Cimento*, Vol. 17D, p. 627 (1995).
171. A. DeSimone: Hysteresis and imperfection sensitivity in small ferromagnetic particles. *Meccanica*, Vol. 30, p. 591 (1995).
172. A. DeSimone, P. Podio-Guidugli: Inertial and self interactions in structured continua: liquid crystals and magnetostrictive solids. *Meccanica*, Vol. 30, p. 629 (1995).
173. A. DeSimone: Magnetoelastic solids: macroscopic response and microstructure evolution under applied magnetic fields and loads. *Journal of Intelligent Material Systems and*

Structures, Vol. 5, p. 787 (1994).

174. A. DeSimone: Magnetization and magnetostriction curves from micromagnetics. Journal of Applied Physics, Vol. 76, p. 7018 (1994).
175. A. DeSimone: Energy minimizers for large ferromagnetic bodies. Archive for Rational Mechanics and Analysis, Vol. 125, p. 99 (1993).

Books:

1. A. DeSimone, B. Perthame, A. Quarteroni, L. Truskinovsky: The Mathematics of Mechanobiology. Springer Lecture Notes in Mathematics 2260, D. Ambrosi and P. Ciarletta (eds.), Springer Nature, 2018
2. G. Dal Maso, A. DeSimone, F. Tomarelli (eds.): Variational Problems in Materials Science. Birkhäuser, 2006

Patents:

1. Morphable Sheet Structure, EU Patent EP3884171, US Patent 11879497 (2023).

Last updated: September 13th, 2024

