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Research interests

I am interested in understanding the basic physics that controls how biological and synthetic materials change shape through the influence of processes such as growth or swelling. Our work uses both experimental and theoretical methods and has relevance in basic biology (morphogenesis), healthcare (tissue engineering) and robotics (the design of actuators).

Employment

University Professor

Chemistry and Physics of Materials
Paris Lodron University of Salzburg
Salzburg, Austria
1 Oct 2017 → present

Research outputs

Twisted-plywood-like tissue formation in vitro. Does curvature do the twist?

Schamberger, B., Ehrig, S., Dechat, T., Spitzer, S., Bidan, C. M., Fratzl, P., Dunlop, J. W. C., Roschger, A. & Moyer, M. (Editor), 28 Mar 2024, In: PNAS Nexus.

Twisted plywood-like tissue formation in vitro. Does curvature do the twist?

Schamberger, B., Ehrig, S., Dechat, T., Spitzer, S., Bidan, C. M., Fratzl, P., Dunlop, J. W. C. & Roschger, A., 6 Sept 2023

Curvature in Biological Systems: Its Quantification, Emergence, and Implications across the Scales

Schamberger, B., Ziege, R., Anselme, K., Ben Amar, M., Bykowski, M., Castro, A. P. G., Cipitria, A., Coles, R. A., Dimova, R., Eder, M., Ehrig, S., Escudero, L. M., Evans, M. E., Fernandes, P. R., Fratzl, P., Geris, L., Gierlinger, N., Hannezo, E., Igljč, A. & Kirkensgaard, J. J. K. & 19 others, Kollmannsberger, P., Kowalewska, Ł., Kurniawan, N. A., Papantoniou, I., Pieuchot, L., Pires, T. H. V., Renner, L. D., Sageman-Furnas, A. O., Schröder-Turk, G. E., Sengupta, A., Sharma, V. R., Tagua, A., Tomba, C., Trepap, X., Waters, S. L., Yeo, E. F., Roschger, A., Bidan, C. M. & Dunlop, J. W. C., 29 Mar 2023, In: Advanced Materials. 35, 13, p. e2206110 2206110.

On shape forming by contractile filaments in the surface of growing tissues

Fratzl, P., Fischer, F. D., Zickler, G. A. & Dunlop, J., 12 Dec 2022, In: PNAS Nexus. pgac292.

Challenges in computational fluid dynamics applications for bone tissue engineering

Pires, T., Dunlop, J., Castro, A. P. G. & Fernandes, P. R., Jan 2022, In: Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences. 478, 2257, p. 20210607 20210607.

Wall Shear Stress Analysis and Optimization in Tissue Engineering TPMS Scaffolds

Pires, T., Dunlop, J., Castro, A. P. G. & Fernandes, P. R., 2022, In: Materials. 15, 20, 7375.

Rubbing Powders: Direct Spectroscopic Observation of Triboinduced Oxygen Radical Formation in MgO Nanocube Ensembles

Schwab, T., Thomele, D., Aicher, K., Dunlop, J. W. C., McKenna, K. & Diwald, O., 14 Oct 2021, In: JOURNAL OF PHYSICAL CHEMISTRY C. 125, 40, p. 22239-22248 10 p.

Advanced materials design based on waste wood and bark

Wenig, C., Dunlop, J. W. C., Hehemeyer-Cürten, J., Reppe, F. J., Horbelt, N., Krauthausen, K., Fratzl, P. & Eder, M., 20 Sept 2021, In: Philosophical transactions. Series A, Mathematical, physical, and engineering sciences. 379, 2206, p. 20200345 1 p., 20200345.

Effects of moisture and cellulose fibril angle on the tensile properties of native single Norway spruce wood fibres

Horbelt, N., Dunlop, J. W. C., Bertinetti, L., Fratzl, P. & Eder, M., 2021, In: Wood Science and Technology. 55, 5, p. 1305-1318 14 p.

The Emergence of Complexity from a Simple Model for Tissue Growth

Dunlop, J. W. C., Zickler, G. A., Weinkamer, R., Fischer, F. D. & Fratzl, P., 1 Sept 2020, In: Journal of Statistical Physics. 180, 1-6, p. 459-473 15 p.

Twisters: An analogy of bilayers for twisting

Turcaud, S., Thorin, A., Bréchet, Y., Fratzl, P. & Dunlop, J. W., 1 Jan 2020, In: Journal of the Mechanics and Physics of Solids. 134, 103742.

Organic Molecule-Driven Polymeric Actuators

Lin, H., Zhang, S., Xiao, Y., Zhang, C., Zhu, J., Dunlop, J. W. C. & Yuan, J., 1 Apr 2019, In: Macromolecular Rapid Communications. 40, 7, p. 1-9 9 p., 1800896.

Protecting offspring against fire: Lessons from Banksia seed pods

Huss, J. C., Fratzl, P., Dunlop, J. W. C., Merritt, D. J., Miller, B. P. & Eder, M., 12 Mar 2019, In: Frontiers in Plant Science. 10, p. 1-12 12 p., 283.

Preface

Estrin, Y., Bréchet, Y., Dunlop, J. & Fratzl, P., 1 Jan 2019, In: Springer Series in Materials Science. 282, p. v-vii

Architected Materials in Nature and Engineering

Estrin, Y. (Co-Editor), Bréchet, Y. (Co-Editor), Dunlop, J. (Co-Editor) & Fratzl, P. (Editor), 2019, Springer Verlag.

Surface tension determines tissue shape and growth kinetics

Ehrig, S., Schamberger, B., Bidan, C., West, A., Jacobi, C., Karen, L., Kollmannsberger, P., Petersen, A., Tomancak, P., Kommareddy, K., Fischer, F. D., Fratzl, P. & Dunlop, J. (Corresponding author), 2019, In: Science Advances. 5, eaav9394.

Comparative in situ analysis reveals the dynamic nature of sclerenchyma cell walls of the fern *Asplenium rutifolium*

Leroux, O., Eder, M., Saxe, F., Dunlop, J. W. C., Popper, Z. A., Viane, R. L. L. & Knox, J. P., 12 Feb 2018, In: Annals of Botany. 121, 2, p. 345-358 14 p.

Tensile forces drive a reversible fibroblast-to-myofibroblast transition during tissue growth in engineered clefts

Kollmannsberger, P., Bidan, C. M., Dunlop, J. W. C., Fratzl, P. & Vogel, V., 1 Jan 2018, In: Science Advances. 4, 1, eaao4881.

The pollen plasma membrane permeome converts transmembrane ion transport into speed

Pertl-Obermeyer, H., Lackner, P., Dunlop, J. & Obermeyer, G., 2018, In: ADVANCES IN BOTANICAL RESEARCH.

The Pollen Plasma Membrane Permeome Converts Transmembrane Ion Transport Into Speed

Pertl-Obermeyer, H., Lackner, P., Dunlop, J. W. C. & Obermeyer, G. (Corresponding author), 2018, In: Advances in Botanical Research. 87, p. 215-265

Scaffold curvature-mediated novel biomineralization process originates a continuous soft tissue-to-bone interface

Paris, M., Götz, A., Hettrich, I., Bidan, C. M., Dunlop, J. W. C., Razi, H., Zizak, I., Huttmacher, D. W., Fratzl, P., Duda, G. N., Wagermaier, W. & Cipitria, A., 15 Sept 2017, In: Acta Biomaterialia. 60, p. 64-80 17 p.

Mechanical behavior of idealized, stingray-skeleton-inspired tiled composites as a function of geometry and material properties

Jayasankar, A. K., Seidel, R., Naumann, J., Guiducci, L., Hosny, A., Fratzl, P., Weaver, J. C., Dunlop, J. W. C. & Dean, M. N., 1 Sept 2017, In: Journal of the Mechanical Behavior of Biomedical Materials. 73, p. 86-101 16 p.

The Role of Titanium Surface Nanostructuring on Preosteoblast Morphology, Adhesion, and Migration

Zhukova, Y., Hiepen, C., Knaus, P., Osterland, M., Prohaska, S., Dunlop, J. W. C., Fratzl, P. & Skorb, E. V., 9 Aug 2017, In: Advanced healthcare materials. 6, 15, 1601244.

Materials Nanoarchitecturing via Cation-Mediated Protein Assembly: Making Limpet Teeth without Mineral

Ukmar-Godec, T., Bertinetti, L., Dunlop, J. W. C., Godec, A., Grabiger, M. A., Masic, A., Nguyen, H., Zlotnikov, I., Zaslansky, P. & Faivre, D., 19 Jul 2017, In: Advanced Materials. 29, 27, 1701171.

Curvature-controlled defect dynamics in active systems

Ehrig, S., Ferracci, J., Weinkamer, R. & Dunlop, J. W. C., 27 Jun 2017, In: Physical Review E. 95, 6, 062609.

Flexible and Actuating Nanoporous Poly(Ionic Liquid)-Paper-Based Hybrid Membranes

Lin, H., Gong, J., Miao, H., Guterman, R., Song, H., Zhao, Q., Dunlop, J. W. C. & Yuan, J., 3 May 2017, In: ACS Applied Materials and Interfaces. 9, 17, p. 15148-15155 8 p.

Ultrasound-driven titanium modification with formation of titania based nanofoam surfaces

Zhukova, Y., Ulasevich, S. A., Dunlop, J. W. C., Fratzl, P., Möhwald, H. & Skorb, E. V., 1 May 2017, In: Ultrasonics Sonochemistry. 36, p. 146-154 9 p.

Hierarchically Arranged Helical Fiber Actuators Derived from Commercial Cloth

Gong, J., Lin, H., Dunlop, J. W. C. & Yuan, J., 25 Apr 2017, In: Advanced Materials. 29, 16, 1605103.

Surface Curvature Differentially Regulates Stem Cell Migration and Differentiation via Altered Attachment Morphology and Nuclear Deformation

Werner, M., Blanquer, S. B. G., Haimi, S. P., Korus, G., Dunlop, J. W. C., Duda, G. N., Grijpma, D. W. & Petersen, A., 1 Feb 2017, In: Advanced Science. 4, 2, 1600347.

Programmable Actuation of Porous Poly(Ionic Liquid) Membranes by Aligned Carbon Nanotubes

Lin, H., Gong, J., Eder, M., Schuetz, R., Peng, H., Dunlop, J. W. C. & Yuan, J., 9 Jan 2017, In: Advanced Materials Interfaces. 4, 1, 1600768.

Relation between the macroscopic pattern of elephant ivory and its three-dimensional micro-tubular network

Albéric, M., Dean, M. N., Gourrier, A., Wagermaier, W., Dunlop, J. W. C., Staude, A., Fratzl, P. & Reiche, I., 1 Jan 2017, In: PLoS ONE. 12, 1, e0166671.

Hole-Programmed Superfast Multistep Folding of Hydrogel Bilayers

Stoychev, G., Guiducci, L., Turcaud, S., Dunlop, J. W. C. & Ionov, L., 8 Nov 2016, In: ADVANCED FUNCTIONAL MATERIALS. 26, 42, p. 7733-7739 7 p.

Honeycomb actuators inspired by the unfolding of ice plant seed capsules

Guiducci, L., Razghandi, K., Bertinetti, L., Turcaud, S., Rüggeberg, M., Weaver, J. C., Fratzl, P., Burgert, I. & Dunlop, J. W. C., 1 Nov 2016, In: PLoS ONE. 11, 11, e0163506.

Gradual conversion of cellular stress patterns into pre-stressed matrix architecture during in vitro tissue growth

Bidan, C. M., Kollmannsberger, P., Gering, V., Ehrig, S., Joly, P., Petersen, A., Vogel, V., Fratzl, P. & Dunlop, J. W. C., 1 May 2016, In: Journal of the Royal Society Interface. 13, 118, 20160136.

Ultrasonically Produced Porous Sponge Layer on Titanium to Guide Cell Behavior

Kopf, J., Ulasevich, S., Baidukova, O., Zhukova, Y., Dunlop, J. W. C., Fratzl, P., Rikeit, P., Knaus, P., Poznyak, S. K., Andreeva, D. V. & Skorb, E. V., 1 Apr 2016, In: *Advanced Engineering Materials*. 18, 4, p. 476-483 8 p.

Bioinspired composites: Making a tooth mimic

Dunlop, J. W. C. & Fratzl, P., 22 Oct 2015, In: *Nature Materials*. 14, 11, p. 1082-1083 2 p.

The Geometric Design and Fabrication of Actuating Cellular Structures

Guiducci, L., Weaver, J. C., Bréchet, Y. J. M., Fratzl, P. & Dunlop, J. W. C., 1 Jul 2015, In: *Advanced Materials Interfaces*. 2, 11, 1500011.

Tissue growth controlled by geometric boundary conditions: A simple model recapitulating aspects of callus formation and bone healing

Fischer, F. D., Zickler, G. A., Dunlop, J. W. C. & Fratzl, P., 6 Jun 2015, In: *Journal of the Royal Society Interface*. 12, 107, 20150108.

Sensing solvents with ultrasensitive porous poly(ionic liquid) actuators

Zhao, Q., Heyda, J., Dzubiella, J., Täuber, K., Dunlop, J. W. C. & Yuan, J., 13 May 2015, In: *Advanced Materials*. 27, 18, p. 2913-2917 5 p.

Availability of extracellular matrix biopolymers and differentiation state of human mesenchymal stem cells determine tissue-like growth invitro

Herklotz, M., Prewitz, M. C., Bidan, C. M., Dunlop, J. W. C., Fratzl, P. & Werner, C., 1 Jan 2015, In: *Biomaterials*. 60, p. 121-129 9 p.

Feeding in billfishes: Inferring the role of the rostrum from a biomechanical standpoint

Habegger, M. L., Dean, M. N., Dunlop, J. W. C., Mullins, G., Stokes, M., Huber, D. R., Winters, D. & Motta, P. J., 1 Jan 2015, In: *Journal of Experimental Biology*. 218, 6, p. 824-836 13 p.

Correction: Pressurized honeycombs as soft-actuators: A theoretical study (*Journal of the Royal Society Interface* (2014) 11, (20140458) DOI: 10.1098/rsif.2014.0458)

Guiducci, L., Fratzl, P., Bréchet, Y. J. M. & Dunlop, J. W. C., 6 Dec 2014, In: *Journal of the Royal Society Interface*. 11, 101, 20141031.

Pressurized honeycombs as soft-actuators: A theoretical study

Guiducci, L., Fratzl, P., Bréchet, Y. J. M. & Dunlop, J. W. C., 6 Sept 2014, In: *Journal of the Royal Society Interface*. 11, 98, 20140458.

Hydro-actuation of ice plant seed capsules powered by water uptake

Razghandi, K., Bertinetti, L., Guiducci, L., Dunlop, J. W. C., Fratzl, P., Neinhuis, C. & Burgert, I., 1 Sept 2014, In: *Bioinspired, Biomimetic and Nanobiomaterials*. 3, 3, p. 169-182 14 p.

An instant multi-responsive porous polymer actuator driven by solvent molecule sorption

Zhao, Q., Dunlop, J. W. C., Qiu, X., Huang, F., Zhang, Z., Heyda, J., Dzubiella, J., Antonietti, M. & Yuan, J., 1 Jul 2014, In: *Nature Communications*. 5, 4293.

Influence of magnetic fields on magneto-aerotaxis

Bennet, M., McCarthy, A., Fix, D., Edwards, M. R., Repp, F., Vach, P., Dunlop, J. W. C., Sitti, M., Buller, G. S., Klumpp, S. & Faivre, D., 1 Jul 2014, In: *PLoS ONE*. 9, 7, e101150.

Intrafibrillar plasticity through mineral/collagen sliding is the dominant mechanism for the extreme toughness of antler bone

Gupta, H. S., Krauss, S., Kerschnitzki, M., Karunaratne, A., Dunlop, J. W. C., Barber, A. H., Boesecke, P., Funari, S. S. & Fratzl, P., 1 Dec 2013, In: *Journal of the Mechanical Behavior of Biomedical Materials*. 28, p. 366-382 17 p.

A three-dimensional model for tissue deposition on complex surfaces

Bidan, C. M., Wang, F. M. & Dunlop, J. W. C., 1 Oct 2013, In: Computer Methods in Biomechanics and Biomedical Engineering. 16, 10, p. 1056-1070 15 p.

Tissue growth into three-dimensional composite scaffolds with controlled micro-features and nanotopographical surfaces

Tamjid, E., Simchi, A., Dunlop, J. W. C., Fratzl, P., Bagheri, R. & Vossoughi, M., 1 Oct 2013, In: Journal of Biomedical Materials Research - Part A. 101, 10, p. 2796-2807 12 p.

Polarized Raman Anisotropic Response of Collagen in Tendon: Towards 3D Orientation Mapping of Collagen in Tissues

Galvis, L., Dunlop, J. W. C., Duda, G., Fratzl, P. & Masic, A., 15 May 2013, In: PLoS ONE. 8, 5, e63518.

Hierarchical multi-step folding of polymer bilayers

Stoychev, G., Turcaud, S., Dunlop, J. W. C. & Ionov, L., 13 May 2013, In: ADVANCED FUNCTIONAL MATERIALS. 23, 18, p. 2295-2300 6 p.

Modelling the role of surface stress on the kinetics of tissue growth in confined geometries

Gamsjäger, E., Bidan, C. M., Fischer, F. D., Fratzl, P. & Dunlop, J. W. C., 1 Mar 2013, In: Acta Biomaterialia. 9, 3, p. 5531-5543 13 p.

All but diamonds-Biological materials are not forever

Weinkamer, R., Dunlop, J. W. C., Bréchet, Y. & Fratzl, P., 1 Feb 2013, In: Acta Materialia. 61, 3, p. 880-889 10 p.

Experimental micromechanical characterisation of wood cell walls

Eder, M., Arnould, O., Dunlop, J. W. C., Hornatowska, J. & Salmén, L., 1 Jan 2013, In: Wood Science and Technology. 47, 1, p. 163-182 20 p.

Geometry as a Factor for Tissue Growth: Towards Shape Optimization of Tissue Engineering Scaffolds

Bidan, C. M., Kommareddy, K. P., Rimpler, M., Kollmannsberger, P., Fratzl, P. & Dunlop, J. W. C., 1 Jan 2013, In: Advanced healthcare materials. 2, 1, p. 186-194 9 p.

Multilevel architectures in natural materials

Dunlop, J. W. C. & Fratzl, P., 1 Jan 2013, In: Scripta Materialia. 68, 1, p. 8-12 5 p.

Accelerated Growth Plate Mineralization and Foreshortened Proximal Limb Bones in Fetuin-A Knockout Mice

Seto, J., Busse, B., Gupta, H. S., Schäfer, C., Krauss, S., Dunlop, J. W. C., Masic, A., Kerschnitzki, M., Zaslansky, P., Boesecke, P., Catalá-Lehnen, P., Schinke, T., Fratzl, P. & Jahnke-Dechent, W., 16 Oct 2012, In: PLoS ONE. 7, 10, e47338.

Shape-programmed folding of stimuli-responsive polymer bilayers

Stoychev, G., Zakharchenko, S., Turcaud, S., Dunlop, J. W. C. & Ionov, L., 22 May 2012, In: ACS Nano. 6, 5, p. 3925-3934 10 p.

How linear tension converts to curvature: Geometric control of bone tissue growth

Bidan, C. M., Kommareddy, K. P., Rimpler, M., Kollmannsberger, P., Bréchet, Y. J. M., Fratzl, P. & Dunlop, J. W. C., 11 May 2012, In: PLoS ONE. 7, 5, e36336.

Tilted cellulose arrangement as a novel mechanism for hygroscopic coiling in the stork's bill awn

Abraham, Y., Tamburu, C., Klein, E., Dunlop, J. W. C., Fratzl, P., Raviv, U. & Elbaum, R., 7 Apr 2012, In: Journal of the Royal Society Interface. 9, 69, p. 640-647 8 p.

Finite element modeling of the cyclic wetting mechanism in the active part of wheat awns.

Zickler, G. A., Ruffoni, D., Dunlop, J. W. C., Elbaum, R., Weinkamer, R., Fratzl, P. & Antretter, T., 1 Jan 2012, In: Biointerphases. 7, 1-4, 1 p.

In vitro "wound" healing: Experimentally based phenomenological modeling

Vermolen, F. J., Gefen, A. & Dunlop, J. W. C., 1 Jan 2012, In: *Advanced Engineering Materials*. 14, 3

Observations of multiscale, stress-induced changes of collagen orientation in tendon by polarized Raman spectroscopy

Masic, A., Bertinetti, L., Schuetz, R., Galvis, L., Timofeeva, N., Dunlop, J. W. C., Seto, J., Hartmann, M. A. & Fratzl, P., 14 Nov 2011, In: *Biomacromolecules*. 12, 11, p. 3989-3996 8 p.

The physics of tissue patterning and extracellular matrix organisation: How cells join forces

Kollmannsberger, P., Bidan, C. M., Dunlop, J. W. C. & Fratzl, P., 21 Oct 2011, In: *Soft Matter*. 7, 20, p. 9549-9560 12 p.

Trabecular bone remodelling simulated by a stochastic exchange of discrete bone packets from the surface

Hartmann, M. A., Dunlop, J. W. C., Bréchet, Y. J. M., Fratzl, P. & Weinkamer, R., 1 Aug 2011, In: *Journal of the Mechanical Behavior of Biomedical Materials*. 4, 6, p. 879-887 9 p.

An excursion into the design space of biomimetic architected biphasic actuators

Turcaud, S., Guiducci, L., Fratzl, P., Bréchet, Y. J. M. & Dunlop, J. W. C., 11 Jul 2011, In: *International Journal of Materials Research*. 102, 6, p. 607-612 6 p.

Characterization of the spatial arrangement of secondary osteons in the diaphysis of equine and canine long bones

Shahar, R., Lukas, C., Papo, S., Dunlop, J. W. C. & Weinkamer, R., 1 Jul 2011, In: *Anatomical Record*. 294, 7, p. 1093-1102 10 p.

Cooperation of length scales and orientations in the deformation of bovine bone

Hoo, R. P., Fratzl, P., Daniels, J. E., Dunlop, J. W. C., Honkimäki, V. & Hoffman, M., 1 Jul 2011, In: *Acta Biomaterialia*. 7, 7, p. 2943-2951 9 p.

Origami-like unfolding of hydro-actuated ice plant seed capsules

Harrington, M. J., Razghandi, K., Ditsch, F., Guiducci, L., Rueggberg, M., Dunlop, J. W. C., Fratzl, P., Neinhuis, C. & Burgert, I., 15 Jun 2011, In: *Nature Communications*. 2, 1, 337.

Artful interfaces within biological materials

Dunlop, J. W. C., Weinkamer, R. & Fratzl, P., 1 Jan 2011, In: *Materials Today*. 14, 3, p. 70-78 9 p.

Collagen orientation during early stages of bone fracture healing investigated by polarized Raman imaging

Galvis, L., Mehta, M., Mašić, A., Dunlop, J. W. C., Duda, G. & Fratzl, P., 14 Dec 2010, *XXII International Conference on Raman Spectroscopy, ICORS 2010*. Vol. 1267. p. 406-407 2 p.

Biological composites

Dunlop, J. W. C. & Fratzl, P., 29 Sept 2010, In: *Annual Review of Materials Research*. 40, p. 1-24 24 p.

Cortical bone composition and orientation as a function of animal and tissue age in mice by Raman spectroscopy

Gamsjaeger, S., Masic, A., Roschger, P., Kazanci, M., Dunlop, J. W. C., Klaushofer, K., Paschalis, E. P. & Fratzl, P., 1 Aug 2010, In: *Bone*. 47, 2, p. 392-399 8 p.

Systematic structural coordination chemistry of p- tertbutyltetrahiacalix[4]arene: Main group metal complexes other than those of group 1

Bilyk, A., Dunlop, J. W., Hall, A. K., Harrowfield, J. M., Hosseini, M. W., Koutsantonis, G. A., Skelton, B. W. & White, A. H., 1 May 2010, In: *European Journal of Inorganic Chemistry*. 14, p. 2089-2105 17 p.

Systematic structural coordination chemistry of p- tertbutyltetrahiacalix[4]arene: Further complexes of lanthanide metal ions

Bilyk, A., Dunlop, J. W., Fuller, R. O., Hall, A. K., Harrowfield, J. M., Hosseini, M. W., Koutsantonis, G. A., Murray, I. W., Skelton, B. W., Sobolev, A. N., Stamps, R. L. & White, A. H., 1 May 2010, In: *European Journal of Inorganic Chemistry*. 14, p. 2127-2152 26 p.

Systematic structural coordination chemistry of p- tertbutyltetrathiacalix[4]arene: Further complexes of transition-metal ions
Bilyk, A., Dunlop, J. W., Fuller, R. O., Hall, A. K., Harrowfield, J. M., Hosseini, M. W., Koutsantonis, G. A., Murray, I. W., Skelton, B. W., Stamps, R. L. & White, A. H., 1 May 2010, In: European Journal of Inorganic Chemistry. 14, p. 2106-2126 21 p.

A theoretical model for tissue growth in confined geometries

Dunlop, J. W. C., Fischer, F. D., Gamsjäger, E. & Fratzl, P., 1 Jan 2010, In: Journal of the Mechanics and Physics of Solids. 58, 8, p. 1073-1087 15 p.

Two stages in three-dimensional in vitro growth of tissue generated by osteoblastlike cells

Kommareddy, K. P., Lange, C., Rumpler, M., Dunlop, J. W. C., Manjubala, I., Cui, J., Kratz, K., Lendlein, A. & Fratzl, P., 1 Jan 2010, In: Biointerphases. 5, 2, p. 45-52 8 p.

Architected structural materials: A parallel between nature and engineering

Dunlop, J. W. C. & Brechet, Y. J. M., 25 Nov 2009, In: Materials Research Society Symposium Proceedings. 1188, p. 15-25 11 p.

Pore structure and fluid sorption in ordered mesoporous silica. II. Modeling

Müter, D., Jähnert, S., Dunlop, J. W. C., Findenegg, G. H. & Paris, O., 27 Aug 2009, In: Journal of Physical Chemistry C. 113, 34, p. 15211-15217 7 p.

New suggestions for the mechanical control of bone remodeling

Dunlop, J. W. C., Hartmann, M. A., Bréchet, Y. J., Fratzl, P. & Weinkamer, R., 1 Jul 2009, In: Calcified Tissue International. 85, 1, p. 45-54 10 p.

Pectin may hinder the unfolding of xyloglucan chains during cell deformation: Implications of the mechanical performance of Arabidopsis hypocotyls with pectin alterations

Abasolo, W., Eder, M., Yamauchi, K., Obel, N., Reinecke, A., Neumetzler, L., Dunlop, J. W. C., Mouille, G., Pauly, M., Höfte, H. & Burgert, I., 1 Jan 2009, In: Molecular Plant. 2, 5, p. 990-999 10 p.

Stress generation in the tension wood of poplar is based on the lateral swelling power of the G-layer

Goswami, L., Dunlop, J. W. C., Jungnikl, K., Eder, M., Gierlinger, N., Coutand, C., Jeronimidis, G., Fratzl, P. & Burgert, I., 1 Nov 2008, In: Plant Journal. 56, 4, p. 531-538 8 p.

The effect of geometry on three-dimensional tissue growth

Rumpler, M., Woesz, A., Dunlop, J. W. C., Van Dongen, J. T. & Fratzl, P., 6 Oct 2008, In: Journal of the Royal Society Interface. 5, 27, p. 1173-1180 8 p.

Effect of low-temperature recovery treatments on subsequent recrystallization in Al-2.5%Mg

Decreus, B., Zurob, H. S., Dunlop, J. & Bréchet, Y., 1 Dec 2007, *Fundamentals of Deformation and Annealing - Proceedings of the International Symposium held to coincide with the retirement of Professor John Humphreys*. p. 381-386 6 p. (Materials Science Forum; vol. 550).

Modelling isothermal and non-isothermal recrystallisation kinetics: Application to Zircaloy-4

Dunlop, J. W. C., Bréchet, Y. J. M., Legras, L. & Zurob, H. S., 30 Jun 2007, In: Journal of Nuclear Materials. 366, 1-2, p. 178-186 9 p.

Dislocation density-based modelling of plastic deformation of Zircaloy-4

Dunlop, J. W., Bréchet, Y. J. M., Legras, L. & Estrin, Y., 15 Jan 2007, In: Materials Science and Engineering A. 443, 1-2, p. 77-86 10 p.

Quantitative criterion for recrystallization nucleation in single-phase alloys: Prediction of critical strains and incubation times

Zurob, H. S., Bréchet, Y. & Dunlop, J., 1 Sept 2006, In: Acta Materialia. 54, 15, p. 3983-3990 8 p.

A coupled recovery/recrystallisation model for zirconium alloys. Influence of hydrogen

Dunlop, J., Bréchet, Y. & Legras, L., 1 Dec 2004, In: Materials Science Forum. 467-470, I, p. 629-634 6 p.

Subtleties with Sulfur: Calixarenes as uranophiles

Asfari, Z., Bilyk, A., Dunlop, J. W. C., Hall, A. K., Harrowfield, J. M., Hosseini, M. W., Skelton, B. W. & White, A. H., 4 Feb 2001, In: Angewandte Chemie - International Edition. 40, 4, p. 721-723 3 p.

Activities

Growing Fibres on Curved Surfaces—Towards an Understanding of Tissue Growth in Bone

Dunlop, J. (Invited speaker), Pertl-Obermeyer, A. (Presenter), Belska, P. (Presenter), Schamberger, B. (Presenter), Anoop, P. (Presenter), Roschger, A. (Presenter), Fischer, F. D. (Presenter), Fratzl, P. (Presenter) & Antretter, T. (Presenter)

4 Dec 2024

Curvature and its role in tissue chirality

Belska, P. (Speaker), Schamberger, B. (Presenter), Pertl-Obermeyer, A. (Presenter), Roschger, A. (Presenter) & Dunlop, J. (Presenter)

28 Aug 2024 → 30 Aug 2024

CurvoBio 2024

Dunlop, J. (Contributor)

28 Aug 2024 → 30 Aug 2024

The role of curvature gradients on collective cell behaviour

Anoop, P. (Speaker), Belska, P. (Presenter), Pertl-Obermeyer, A. (Presenter), Schamberger, B. (Presenter), Roschger, A. (Presenter) & Dunlop, J. (Presenter)

28 Aug 2024 → 30 Aug 2024

PhD Defence - Examiner

Dunlop, J. (Examiner)

3 Jun 2024

Reviewer and Examiner JD Engineering Science

Dunlop, J. (Examiner)

17 May 2024

Substrate curvature and its control on tissue chirality

Belska, P. (Speaker), Schamberger, B. (Presenter), Roschger, A. (Presenter) & Dunlop, J. (Presenter)

15 Apr 2024 → 18 Apr 2024

Rubbing Powders: Interfacial Radical Formation in Compacted Nanoparticle Ensembles

Diwald, O. (Speaker), Schwab, T. (Speaker), Aicher, K. (Speaker), McKenna, K. (Speaker) & Dunlop, J. (Speaker)

2 Oct 2023

Examination of Masters Thesis in Biophysics at the HU Berlin

Dunlop, J. (Examiner)

21 Sept 2023

Examiner Masters Science and Technology of Materials

Dunlop, J. (Examiner)

10 Jul 2023

Examiner Masters CPM

Dunlop, J. (Examiner)
20 Jun 2023

Examiner Masters Medical Biology

Dunlop, J. (Examiner)
13 Mar 2023

PhD Defence - Examiner

Dunlop, J. (Examiner)
24 Feb 2023

MorphoPhysics - Physical Explorations into Growth and Form

Dunlop, J. (Speaker)
15 Dec 2022

Biophysical modelling of the role of geometry on tissue patterning and growth

Dunlop, J. (Speaker)
13 Dec 2022

PhD Defence Committee Reviewer and Examiner

Dunlop, J. (Examiner)
13 Dec 2022

Wissenstransfer zur UniBrennt Besetzung

Leik, L. (Speaker), Klackl, J. (Speaker), Blechert, J. (Speaker), Knoll, M. (Speaker), Koch, A. (Speaker), Dunlop, J. (Speaker) & Zeller, C. (Speaker)
Nov 2022 → ...

MorphoPhysics, an introduction to our research in Salzburg

Dunlop, J. (Speaker)
28 Oct 2022

Reviewer and Examiner PhD Defence

Dunlop, J. (Examiner)
20 Sept 2022

Chair of Examination Board

Dunlop, J. (Examiner)
14 Sept 2022

Helical fibrous materials architectures in biology

Dunlop, J. (Speaker)
14 Sept 2022

Modelling the role of curvature on tissue patterning and growth (Keynote)

Dunlop, J. (Speaker)
11 Apr 2022 → 13 Apr 2022

Chair of Examination Board - Masters Medical Biology

Dunlop, J. (Examiner)
23 Mar 2022

Reviewer and Examiner JD Engineering Science

Dunlop, J. (Examiner)

18 Mar 2022

Reviewer and Examiner JD Engineering Science

Dunlop, J. (Examiner)
18 Mar 2022

Architecture Naturelles

Dunlop, J. (Speaker)
18 Jan 2022

Department of Biomaterials Max Planck Institute of Colloids and Interfaces Potsdam 14476 Germany

Dunlop, J. (Visiting researcher)
2 Aug 2021 → 19 Aug 2021

Reviewer and Examiner JD Engineering Science

Dunlop, J. (Examiner)
4 Jun 2021

Reviewer and Examiner JD Engineering Science

Dunlop, J. (Examiner)
4 Jun 2021

Reviewer and Examiner JD Engineering Science

Dunlop, J. (Examiner)
4 Jun 2021

Reviewer and Examiner - PhD Defence

Dunlop, J. (Examiner)
28 May 2021

Examiner Bachelor JD Engineering Science

Dunlop, J. (Examiner)
18 Mar 2021

Swarming Behaviour in Confinement

Dunlop, J. (Speaker)
5 Mar 2021

Delaunay surfaces and the mechanics of tissue patternin

Dunlop, J. (Speaker)
4 Mar 2021

CurvoBio2021

Dunlop, J. (Organiser)
2021

Visualisation of 3D Biological samples

Dunlop, J. (Speaker) & Eder, M. (Speaker)
2021

Reviewer and Examiner - Doctoral Thesis

Dunlop, J. (Examiner)
20 Nov 2020

Masters Degree Review

Dunlop, J. (Examiner)
17 Nov 2020

Fibrous Delaunay Surfaces - Part 2

Dunlop, J. (Speaker)
3 Aug 2020

Fibrous Delaunay Surfaces - Part 1

Dunlop, J. (Speaker)
27 Jul 2020

Examiner in Masters Defence Committee

Dunlop, J. (Examiner)
29 Jun 2020

Examiner Bachelor JD Engineering Science

Dunlop, J. (Examiner)
28 May 2020

Examiner Bachelor JD Engineering Science

Dunlop, J. (Examiner)
28 May 2020

Examiner Bachelor JD Engineering Science

Dunlop, J. (Examiner)
7 Apr 2020

Examiner and Reviewer for PhD Thesis

Dunlop, J. (Examiner)
30 Jan 2020

Anticlastic surfaces for tissue growth

Dunlop, J. (Speaker)
26 Nov 2019

Examiner Bachelor JD Engineering Science

Dunlop, J. (Examiner)
15 Nov 2019

Examiner Bachelor JD Engineering Science

Dunlop, J. (Examiner)
15 Nov 2019

Surfaces shape and influence tissue form

Dunlop, J. (Speaker)
24 Sept 2019

The influence of geometric features on cell and extracellular matrix patterning

Dunlop, J. (Speaker)
18 Sept 2019

Examiner in Masters Defence Committee

Dunlop, J. (Examiner)
17 Sept 2019

Examiner in PhD Defence Committee

Dunlop, J. (Examiner)
12 Sept 2019

Morphogenesis on Chip

Dunlop, J. (Speaker)
11 Sept 2019

Examiner Bachelor JD Engineering Science

Dunlop, J. (Examiner)
12 Jul 2019

The influence of geometry on shape-changing soft-matter

Dunlop, J. (Speaker)
15 May 2019

Introduction to X-ray Tomography

Dunlop, J. (Speaker)
7 Mar 2019

CurvoBio 2019

Dunlop, J. (Organiser), Schamberger, B. (Organiser) & Bidan, C. (Organiser)
6 Feb 2019

External Examiner of Masters Thesis

Dunlop, J. (Examiner)
2019

The physics of tissue growth on curved surfaces

Dunlop, J. (Guest lecturer)
13 Sept 2018 → ...

The physics of tissue growth on curved surfaces.

Dunlop, J. (Guest lecturer)
16 Jan 2018 → ...