Krishnagoud Manda
School of Mechanical and Aerospace Engineering
Material and Advanced Technologies for Healthcare
Type of address: Postal address.
Room 05.021B - Ashby Tower
United Kingdom
Email: K.Manda@qub.ac.uk
Phone: +44 (0)28 9097 4034

Employment

Lecturer
School of Mechanical and Aerospace Engineering
Queen's University Belfast
Belfast, United Kingdom
01 Nov 2017 → present

Material and Advanced Technologies for Healthcare
Queen's University Belfast
01 Nov 2017 → present

Research Interests

Dr Manda's research interests are computational biomechanics, nonlinear solid mechanics, biomaterials and additive manufacturing, multiscale modelling of soft/hard tissues, musculoskeletal tissue engineering and regenerative medicine. Dr Manda has been involved in various projects focussing on computational modelling of soft tissue (articular cartilage) and micro –macro-mechanical modelling of hard tissue (bone), constitutive modelling of time-dependent behaviour and mechanobiology of bone. His research has more recently focused on bioresorbable biomaterials, 3d printing, in vitro tissue regeneration in bone/cartilage scaffolds and developing predictive mechanobiological models.

Teaching

MSc Mechanical Properties of Materials module (MTS7002)
Module co-ordinator for Laboratory Programme 1 module (MEE1011)
Module co-ordinator and lecturer for Mathematics 1 module (MEE1001)
Undergraduate projects related to Biomechanics and Biomaterials

Research outputs

In vitro degradation of 3D-printed poly(L-lactide-co-glycolic acid) scaffolds for tissue engineering applications
Ghosh Dastidar, A., Clarke, S. A., Larrañeta, E., Buchanan, F. & Manda, K., 09 Sept 2023, In: Polymers. 15, 18, 18 p., 3714.

A mathematics peer assessment process for flexible modes of delivery
Pick, L. T., Manda, K., Cole, J. S., McCartan, C. & Hermon, J. P., 30 Nov 2022, *SEFI 2022 Proceedings*. Järvinen, H-M., Silvestre, S., Llorens, A. & Nagy, B. (eds.). European Society for Engineering Education, p. 1436-1444 9 p. (SEFI Proceedings).

In-vitro degradation in 3D Printed Poly(L-lactide-co-glycolide) scaffolds under physiological and accelerated conditions for cartilage tissue engineering
Ghosh Dastidar, A., A Clarke, S., Buchanan, F. & Manda, K., 01 Sept 2022.

Degradation behaviour of 3D Printed Poly(L-lactide-co-glycolide) scaffolds for cartilage tissue engineering
Ghosh Dastidar, A., A Clarke, S., Buchanan, F. & Manda, K., 04 Jul 2022.

3D-printed PLGA/alginate composite scaffolds for regeneration of articular cartilage
Ghosh Dastidar, A., A Clarke, S., Buchanan, F. & Manda, K., 20 May 2022.

3D Printing OF PLGA/Alginate Composite Scaffolds For Cartilage Tissue Engineering
Ghosh Dastidar, A., A Clarke, S., Buchanan, F. & Manda, K., 15 Nov 2021.

Effect of loading frequency on deformations at the bone–implant interface
Xie, S., Manda, K. & Pankaj, P., 27 Sept 2019, (Early online date) In: Proceedings of the Institution of Mechanical Engineers, Part H, Journal of Engineering in Medicine.

Time-dependent behaviour of bone accentuates loosening in the fixation of fractures using bone-screw systems
Xie, S., Manda, K. & Pankaj, P., 25 Oct 2018, In: Bone and Joint Research. 7, 10, p. 580-586

Bone's time-dependent behaviour accentuates loosening in fracture fixation using bone-screw systems
Xie, S., Manda, K. & Pankaj, P., 2018.

Effect of including damage at the tissue level in the nonlinear homogenisation of trabecular bone
Levrero-Florencio, F., Manda, K., Margetts, L. & Pankaj, P., 01 Oct 2017, In: Biomechanics and Modeling in Mechanobiology. 16, 5, p. 1681-1695

Nonlinear homogenisation of trabecular bone: Effect of solid phase constitutive model
Levrero-Florencio, F., Manda, K., Margetts, L. & Pankaj, P., 01 May 2017, In: Proceedings of the Institution of Mechanical Engineers, Part H: Journal of Engineering in Medicine. 231, 5, p. 405-414

Time Dependent Behaviour of Trabecular Bone at Multiple Load Levels
Xie, S., Manda, K., Wallace, R. J., Levrero-Florencio, F., Simpson, A. H. R. W. & Pankaj, P., 01 May 2017, In: Annals of Biomedical Engineering. 45, 5, p. 1219-1226

Nonlinear viscoelastic characterization of bovine trabecular bone
Manda, K., Wallace, R. J., Xie, S., Levrero-Florencio, F. & Pankaj, P., 01 Feb 2017, In: Biomechanics and Modeling in Mechanobiology. p. 1-17 17 p.

Micro-CT based finite element models of cancellous bone predict accurately displacement once the boundary condition is well replicated: A validation study
Chen, Y., Dall'Ara, E., Sales, E., Manda, K., Wallace, R., Pankaj, P. & Viceconti, M., 01 Jan 2017, In: Journal of the Mechanical Behavior of Biomedical Materials. 65, p. 644-651 8 p.

Demineralised Trabecular bone stiffens with increasing load levels
Xie, S., Wallace, R. J., Manda, K. & Pankaj, P., 2017.

Evaluating the macroscopic yield behaviour of trabecular bone using a nonlinear homogenisation approach
Levrero-Florencio, F., Margetts, L., Sales, E., Xie, S., Manda, K. & Pankaj, P., 01 Aug 2016, In: Journal of the Mechanical Behavior of Biomedical Materials. 61, p. 384-396

Linear viscoelasticity - bone volume fraction relationships of bovine trabecular bone
Manda, K., Xie, S., Wallace, R. J., Levrero-Florencio, F. & Pankaj, P., 18 Apr 2016, In: Biomechanics and Modeling in Mechanobiology. 15, 6, p. 1631-1640

A combined nonlinear viscoelastic-viscoplastic model for trabecular bone
Manda, K., Wallace, R. J., Xie, S., Sales, E., Levrero-Florencio, F. & Pankaj, P., 2015.

Anisotropic nonlinear viscoelastic modelling of trabecular bone
Manda, K., Wallace, R. J., Sales, E., Levrero-Florencio, F. & Pankaj, P., 2015.

Implementation and validation of nonlinear anisotropic viscoelastic model for trabecular bone.
Manda, K., Wallace, R. J., Sales, E., Levrero-Florencio, F. & Pankaj, P., 2015.

Massive parallel simulations of trabecular bone
Levrero-Florencio, F., Margetts, L., Manda, K. & Pankaj, P., 2015.

Micro-CT based finite element models predict accurate displacement field measured with deformable image registration
Chen, Y., Dall′Ara, E., Manda, K., Sales, E., Wallace, R. J., Pankaj, P. & Viceconti, M., 2015.

The changing microarchitecture of trabecular bone during compression
Wallace, R. J., Manda, K., Sales, E., Pankaj, P. & Simpson, A. H. R. W., 2015.

Modeling of constrained articular cartilage growth in an intact knee with focal knee resurfacing metal implant
Manda, K. & Eriksson, A., Jun 2014, In: Biomechanics and Modeling in Mechanobiology. 13, 3, p. 599-613 15 p.

FE simulations of cartilage mechanics and growth around a localized defect-filling metal implant
Manda, K., Pankaj, P. & Eriksson, A., 2014.

Time-dependent behavior of cartilage surrounding a metal implant for full-thickness cartilage defects of various sizes: A finite element study
Manda, K. & Eriksson, A., May 2012, In: Biomechanics and Modeling in Mechanobiology. 11, 5, p. 731-742 12 p.

Modeling of articular cartilage growth
Manda, K. & Eriksson, A., 2012.

Finite element simulations of a focal knee resurfacing implant applied to localized cartilage defects in a sheep model
Manda, K., Ryd, L. & Eriksson, A., 15 Mar 2011, In: Journal of Biomechanics. 44, 5, p. 794-801 8 p.

Simulating metal implants in full thickness cartilage defects
Manda, K. & Eriksson, A., 2011, *ASME 2011 Summer Bioengineering Conference, SBC 2011*. PARTS A AND B ed. p. 1265-1266 2 p.

Metal plugs for cartilage defects - a finite element study.
Manda, K., 2010, p. 116-119. 4 p.

Particulars

Dr Krishna Manda received his master's degree (M.Tech) in Mechanical Engineering from Indian Institute of Technology Delhi, India and PhD in Engineering Mechanics from KTH Royal Institute of Technology, Stockholm, Sweden. After his PhD, he worked as a postdoctoral research associate at the University of Edinburgh, UK and then as a senior research associate at University of Portsmouth, UK before joining as a lecturer in the School of Mechanical and Aerospace Engineering at Queen’s University Belfast in Nov 2017.