EDITORIAL

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Editorial for the IWCMM29 special issue

This special issue is based on selected works presented at the 29th International Workshop on Computational Mechanics of Materials (IWCMM29) which was held in Dubrovnik, Croatia, on 15–18 September 2019. The conference was chaired by Prof. Zeljko Bozic (University of Zagreb) and Prof. Siegfried Schmauder (University of Stuttgart). The conference had a wide range of participants from both academia, research organisations and industry. Participants from 25 different countries made the conference truly international with over 80 high-quality presentations. In addition, there were six inspiring plenary lectures delivered by world-leading experts in their areas including Prof. Alan Needleman (Texas A&M University), Prof. Josko Ozbolt (University of Stuttgart), Prof. Reinhard Pippan (Erich Schmid Institute of Materials Science of the Austrian Academy of Sciences), Prof. Jianying He (Norwegian University of Science and Technology), Prof. Robert Skelton (Texas A&M University), and Prof. Erkan Oterkus (University of Strathclyde).

The conference covered a wide range of topics on computational mechanics of materials. This spectrum is well represented in this special issue. Wang et al. [1] presented how to determine the internal length scale parameter, horizon, in state-based peridynamics. Li et al. [2] used crystal plasticity finite element method to study pile-up/sink-in phenomena during the spherical indentation simulation. Nguyen et al. [3] developed a new peridynamic-based machine learning model for one- and two-dimensional structures. Yang et al. [4] considered a strain gradient continuum model for a metamaterial with a periodic lattice substructure. Ferretti et al. [5] investigated buckling of tower buildings on elastic foundation subjected to compressive tip forces and self-weight. Javanbakht et al. [6] developed an explicit nonlinear finite element approach to solve coupled phase field and elasticity equations for martensitic phase transformations at nanoscale by considering large strains. Wang et al. [7] presented how to derive dual-horizon state-based peridynamics formulation by using

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Euler–Lagrange equation. Barchiesi et al. [8] compared discrete and homogenised continuum approaches for extension test of bi-pantographic fabrics. Fusek et al. [9] proposed two modifications for Jiang criterion for constant amplitude loading of the aluminium alloy, AA2124-T851 and the stainless steel, SS316L. dell'Erba [10] demonstrated an approach for measuring distances between elements of an underwater robotic swarm system. Serban et. al. [11] investigated the influence of triaxial stress state on the failure of polyurethane rigid foams. Russo et al. [12] provided a thermodynamically consistent description of Cosserat medium to model adiabatic shear bands in metals. Marinopoulos et al. [13] examined the effects of simulation parameters in modelling indentation of human lower-limb soft tissue. In another study, Serban et al. [14] presented mechanical behaviour of wood fibre-reinforced geopolymers under compressive and flexural loading conditions. Abali et al. [15] performed thermo-mechano-chemical analysis of thermosetting polymers used in post-installed fastening systems in concrete structures. Hernandez-Rodriguez and Lekszycki [16] analysed moving interface between mandible tissue and bone substitute material after tooth implant application by using a finite memory model of bone healing. Lebee et al. [17] demonstrated civil engineering applications of the Asymptotic Expansion Load Decomposition beam model. Wang et al. [18] presented how to determine stress intensity factors under thermal loading conditions by using domain integral method and ordinary state-based peridynamics. Danesh et al. [19] investigated the effect of boundary for the coupled phase field and non-local integral elasticity approach. In another study, Danesh et. al. [20] compared one-dimensional non-local integral Timoshenko beam and two-dimensional non-local integral elasticity approaches for bending of nanoscale beams. Akcay and Oterkus [21] proposed a new criterion for dynamic ductile fracture initiation of tensile mode. Golmakani et al. [22] performed bending analysis of functionally graded nanoplates based on a higher-order shear deformation theory. Bulut and Ergin [23] investigated hydro-acoustic characteristics of submerged bodies with different geometric parameters. Nikabadze and Ulukhanyan [24] discussed about variational principles in micropolar theories of single-layer thin bodies. Finally, Branecka and Lekszcki [25] provided a review of mathematical models for response of living cells to mechanical loads.

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