

STRENGTH AND FRACTURE OF ELASTIC-PLASTIC MATERIALS UNDER EXTREME CONDITIONS

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ABSTRACT

The topic of strength and fracture of elastic-plastic materials is always a challenge issue on engineering mechanics and materials. Specially, there is absolutely a need for rapid development of science and engineering on intelligent manufacture, green energy, electronic information and military industry, and so on. There are some corresponding examples: to personalized design and 3D print artificial prosthesis for reconstructing defect bone in human body; to design exploiting facilities of hydraulic fracture for exploiting oil and gas in the shale rock lain hidden in a few kilometers underground; to manufacture electronic chips and products for refraining from crack propagation under high velocity impact and to design biological protection materials and structures, like polymer and ceramic composite, under explosive loading with frequencies from MHz to kHz and peak pressures in a few kPa. All these problems intersect multi-disciplinary, multi-physics field, multi-scale, which have motivated many new theoretical models, computational methods and experiment technologies related on strength and fracture of elastic-plastic materials and structures. Thus, we sincerely welcome the academic colleagues join this IS to share your new research ideas, results and achievements.

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