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Studies of pulsed electro plasticity in metals

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Application of high-intensity electric fields and/or currents is known to enhance materials'deformability. For instance, a high-density electric fields/currents applied continuously (CC: continuous current) or in short pulses (PC: pulsed current) on metals and ceramics may significantly affect their deformation response to external loads. This phenomenon is commonly referred to as electroplasticity or electroplastic effect (EP). In the present study, we carry out mechanical tensile experiments in combination with the application of high intensity electric currents for very short durations in copper samples. Our study captures the enhanced plasticity induced in the metal due to EP. Post-event microstructural studies highlight the effect of high intensity electric current in the material.

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