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With the second volume, we continue our mission to providing theoretical and experimental research that contribute new insights and practical findings in the field of crystal plasticity-related topics. Once again, a completely new set of 26 original works (including 22 research articles, 3 communications, and 1 review) has been collected. As in the case of the first volume, here, a full spectrum of topics belonging to the field of crystal plasticity is represented, including both numerical simulations and experimental works. By taking into account the investigated materials, the papers can be assigned to the following thematic groups: Steels and iron-based alloys; Non-ferrous alloys with fcc- (Ni- and Cu-based), or hcp crystal structure (Mg- and Ti-based). Other examples include Zirconium, Bi-Sn alloy, or polycarbonate resins; Multicomponent and high-entropy alloys; General theoretical studies on crystal plasticity. Specifically, the reprint should be interesting for students of material science and engineering, Ph.D. candidates, and researchers dealing with various theoretical and practical aspects of plastic deformation in crystalline materials.