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Compressive responses of ultrafine-grained titanium within a broad range of strain rates and temperatures

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Highlights

- Effects of strain rate, temperature and grain size on the compressive behavior for UFG and CG titanium were comparatively studied.
- Main contributions to yield and flow stresses of CP-Ti, including grain sizes, dislocation densities and concentration of interstitial impurities, are estimated.
- The primary strengthening sources for CG titanium comes from interstitials, which contribute ~64% of the yield stress. While grain boundary strengthening, dislocation interaction and interstitials contribute ~38%, ~32% and ~30% of the yield stress of UFG-Ti, respectively.

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