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Single-crystal elastic constants and load partitioning in titanium alloys

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Single-crystalline elastic constants in titanium alloys Ti-6Al-4V, Ti-3Al-8V-6Cr-4Zr-4Mo and Ti-6Al-2Sn-4Zr-6Mo have been determined using neutron and synchrotron diffraction on polycrystalline bulk samples under mechanical load. An approach to account for load partitioning between the phases has been applied in the analysis. By this means not only the apparent elastic constants of each phase in the alloys were obtained, but also load transfer corrected values according to the pure phases.

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