

A Benchmark for Some Elastic and Mechanical Properties of Uranium Dioxide

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Abstract : We present some elastic parameters of cubic fluorite type uranium dioxide (UO₂) with a recent EAM type interatomic potential through geometry optimization calculations. Typical cubic elastic constants, bulk modulus, shear modulus, young modulus and other related elastic parameters were calculated during research. After calculations, we compared our results not only with the available theoretical data but also with previous experimental results. Our results are consistent with experiments and compare well the former theoretical results of the considered parameters of UO₂.

Keywords : UO₂, elastic constants, bulk modulus, mechanical properties

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