

# Diffraction X-ray examination of samples after shock-wave loading to detect reversible phase transitions

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Qualitative phase analysis using X-ray diffraction allows to detect irreversible phase transformations under shock-wave loading. But even if the phase transformation is reversible, the material bears traces of this transformation. The results of X-ray diffraction study of micro-distortions of the uranium crystal lattice along the cross section of a thick-walled shell covered after shock-wave loading are presented. The Williamson-Hall method was used to analyze the angular dependence of the broadening of diffraction peaks. It is shown that the phase transformation leads to a sharp decrease in the magnitude of micro-distortions.