

ON LEAD POWDER LOE TEMPERATURE X-RAY DIFFRACTION

Arghir, G., Baraian, M., Jumate, N., **Prica, C.V.**,

Proceeding of Third International Conference on Materials and Technologies,
MATEHN'02, Acta Technica Napocensis, vol. 45, p.524-527

Abstract: Lead powder of 99.0 % purity were subjected to the X-ray diffraction at room temperature and two low temperatures: 173 and 113 K. The crystal parameters of 494.49, 493.44 and respectively 492.40 pm were obtained. Thermal linear expansion coefficients were of $17.9 \times 10^{-6} \text{K}^{-1}$ (interval of 298-173 K), $34.85 \times 10^{-6} \text{K}^{-1}$ (interval of 173-113 K), and an average of $22.86 \times 10^{-6} \text{K}^{-1}$ (interval of 298-113 K), computed from crystal parameters. Diffraction intensity of reflection planes are changing as the temperature decreases, but their values are as calculations predict. A drastic change in the thermal linear expansion coefficient and in the line intensity take place in the interval of 173-113 K.

References:

1. I. Donohue, The structure of the elements, John Wiley, New York, 1985, p. 278-279.
2. B.D. Cullity, Elements of the X-ray diffraction, Addison-Wesley, Reading, Massachusetts, 1978, p. 506.
3. R.C. Weast, Handbook of Chemistry and Physics, 53 Edition, Chemical Rubber, Cleveland, 1972, p D41.
4. G. Arghir, Caracterizarea cristalografica a materialelor si aliajelor prin difractie cu raze XS, UTCN, 1993, p. 287.