

Thematic area: Nanostructured surfaces

The moving lines on electron spectra as charge reflexes on non-equilibrium states of nanostructured surfaces

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The surfaces of nanocomposites can essentially change their properties under intense electron irradiation and have strong responses on variation of their charge. However the non-stable surface layers may be a source of some interesting effects at common experimental conditions of electron spectroscopy [1, 2]. One of the effects is the soliton-like "moving line" (ML) which appears in electron spectrum and moving along them during analysis only for some surface regions at initial stage of their transformation. So, the ML changes their energy position step by step in long time (fig. [2]). But the intensity of ML is more stable and may be used as structural sensitive parameter.

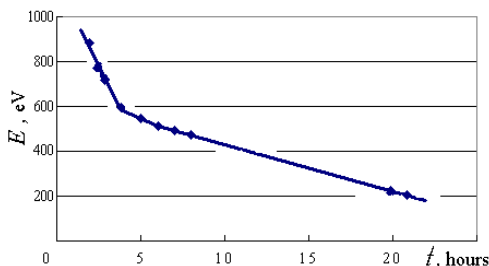


Fig. Change of kinetic energy E of ML for $(\text{Bi,Pb})_2\text{Sr}_2\text{Ca}_2\text{Cu}_3\text{O}_x$ HTSC from the start moment of electron beam study before electron induced transformation threshold [2].

Some samples of steel surfaces formed by external friction, HTSC ceramics after solid-phase synthesis, thin-layer systems "organic-oxide-metal on dielectric substrate" after in-situ intense electron beam irradiation were investigated by the methods of scanning electron microscopy and Auger electron spectroscopy for the purpose of ML properties investigation.

1. *Mishchuk O.A.* The role of organic films in thermal processes induced by electron beam at the oxidized metallic surface /Proc. 182 Meet. Electrochem. Society, Toronto, October 11-16, 1992. – New Jersey: The Electrochem. Soc., Inc., 1992. – P. 739-740.

2. *Mishchuk O.A., Korostil I.A.* A peculiarity of electron spectra of the HTSC-ceramics at electron irradiation inducing transformation of grains / Abst. EMAS 2002: 5th reg. workshop on electron probe microanalysis of materials today

– Practical aspects, Szczyrk, Poland, May 22-25, 2002. – Szczyrk, 2002. – P. 196.