However, for each case more complex shapes of the top layer were also considered showing the possibility to tailor the high frequency responses of the designed elements.

The research was carried out within the state assignment of Minobrnauki of Russia № AAAA-A19-119070890020-3 (theme "Alloys").

1. Makhotkin V.E., Shurukhin B.P., Lopatin V.A., Marchukov P.Yu., Levin Yu.K., Sensors and Actuators A, 27, 759 (1991).
2. Bukreev D.A., Derevyanko M.S., Moiseev A.A., Kuz'mina A.S., Kurlyandskaya G.V., Semirov A.V., Phys. Met. Metallogr. 121, 949 (2020).
3. Amalou F., Gijs M. A. M., Journal of Applied Physics 90, 3466 (2001).
4. Kurlyandskaya G.V., Garcia-Arribas A., Barandiaran J.M., Kisker E., Sensors and Actuators A: Physical 91, 116 (2001).

X-RAY PHOTOELECTRON SPECTRA OF Ag-Au COLLOIDAL NANOPARTICLES AFTER INTERACTION WITH LINEAR CARBON CHAINS

Zhidkov I.S.[1, 2], Losev T.S.[1], Kurmaev E.Z.[1, 2], Cholakh S.O.[1], D'Urso L.[3]

[1)] Institute of Physics and Technology, Ural Federal University
[2)] M.N. Mikheev Institute of Metal Physics, Ural Branch of Russian Academy of Sciences
[3)] Dipartimento di Scienze Chimiche, Universita' di Catania

E-mail: i.s.zhidkov@urfu.ru

We present the results of XPS study of Ag-Au alloy nanoparticles encapsulated into linear carbon chains shell.

The results of X-ray photoelectron spectra (XPS) characterization of the surface of Ag-Au colloidal nanoparticles (Ag-Au NPs), prepared by laser ablation in water before and after interaction with linear carbon chains (LCC), are presented. No additional features appear in high-energy resolved XPS core level spectra of Ag-Au NPs which indicates that surface is not oxidized. The measurements of XPS Ag 3d-spectrum of (Ag-Au)@LCC manifests the additional low-energy structure that is associated with the formation of Ag–C bonds. The charge transfer between Au atoms on the NPs surface and LCC was established. Additionally, some oxidation of the Ag atoms on the surface of (Ag-Au)@LCC is observed which arises during laser ablation in water. We assume that oxidative species will preferably interact with the areas outside the LCC instead of oxidizing the carbon chains which was confirmed by XPS C 1s spectra.

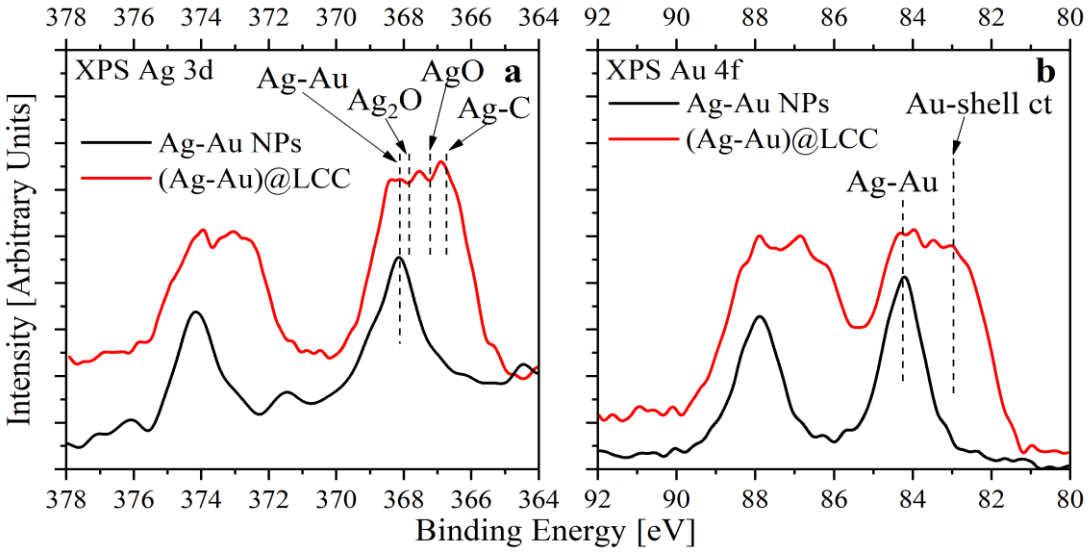

Figure 1. XPS spectra of Ag-Au and (Ag-Au)@LCC: (a) Ag 3d and (b) Au 4f. Label "Au-shell ct" designates charge transfer between Au atoms and LCCs shell.

This study was supported by Russian Science Foundation (Project 19-72-00001).

1. I.S. Zhidkov et al. Appl. Sci. 11, 685 (2021).

МЕТОДИКА КОЛИЧЕСТВЕННОЙ ОЦЕНКИ АМОРФНОЙ КОМПОНЕНТЫ ПО УРОВНЮ ФОНА РЕНТГЕНОВСКОЙ ДИФРАКТОГРАММЫ ЦИРКОНИЙ СОДЕРЖАЩИХ ХЛОРАЛЮМИНАТОВ

Чукина А. А.[1], Денисова О. В.[1]

[1)] Уральский федеральный университет имени первого Президента России Б.Н. Ельцина, г. Екатеринбург, Россия

E-mail: nessy-sevanir@mail.ru

THE QUANTITATIVE ESTIMATION OF AMORPHOUS CONTENT AT THE ZIRCONIUM-CONTAINING CHLORALUMINATES BY THE XRD-BACKGROUND LEVEL

Chukina A. A.[1], Denisova O. V.[1]

[1)] Ural Federal University, Yekaterinburg, Russia

The calibration curve was obtained based on model samples with known amorphous content. It made possible quantitative estimate the amorphous phase at the zirconium-containing chloraluminates by the XRD-background level.