компонента на ход процесса комплексообразования с ионами металлов первого переходного ряда. Показано, что образование полимерметаллических комплексов сопровождается снижением энергии активации. Далее были рассчитаны изменения энтропии активации для данных объектов. Установлено возрастание структурного вклада в свободную энергию активации. Таким образом, обработка электрическим переменным током частотой 10^5 Гц смеси поливиниловый спирт, полиакриламид, желатин при низких температурах, будет способствовать возрастанию комплексообразующей способности и может быть использована при разработке систем очистки сточных вод.

1. Жумаханова Р.К., Абишева Р.Ж., Кылышбаева Г.Б. и др. Использование природных коагулянтов и модифицированных водорастворимых полимеров (МВРП) в процессе очистки сточных вод промышленных предприятий // Международ. журн. эксперимент. образования. 2014. № 3. С. 107–109.

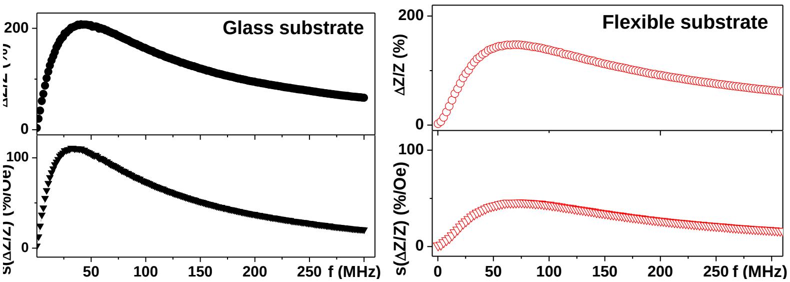
FLEXIBLE MAGNETOELECTRONICS: SOME ASPECTS OF THE DEVELOPMENT OF HIBRID THIN FILM STRUCTURES

Kurlyandskaya G.V.[1,2], *Chlenova A.A.*[2], *Burgoa Beitia A.*[1], *Terzian T.V.*[2]
[1] University of the Basque Country UPV-EHU
48940, Leioa, Spain
[2] Ural Federal University
620002, Ekaterinburg, Mira, 19

Flexible electronics – is an important area research and technology. Flexible substrates offer advantages for sensor applications (low weight, excellent adaptability in multipurpose devices with complex shape, etc.) but they also emerge new research lines to solve the problems with the thermal energy dissipation, static charges, adhesion at the polymer-magnetic film interface etc. Flexible substrates where shown to be an attractive solution for magnetic biosensors containing microfluidic systems. For magnetic flexible electronics based on thin film sensitive elements there is a special need to design the appropriate combinations of magnetic multilayered structure and compatible polymers appropriate for fabrication conditions which are necessary for the deposition of high quality magnetic material.

One of the promising effects for flexible magnetoelectronics is the giant magnetoimpedance (MI) consisting in the great change of the electrical impedance of soft ferromagnetic conductor under application an external magnetic field [1]. In this work, we describe our experience in design, fabrication and characterization of MI thin film based sensitive elements prepared by rf-sputtering technique being deposited onto rigid and flexible substrates. Figure 1 shows frequency dependence of MI ratio $\Delta Z/Z = 100\times([Z(H)-Z(H_{max})]/ Z(H_{max}))$, H_{max}= 150 Oe and MI sensitivity $s(\Delta Z/Z)= \Delta Z/Z/\Delta H$ with ΔH = 0.1 Oe. The GMI results presented in this work are based on the measurements of the scattering parameters using a vector network analyser when the sample inserted in a microstrip transmission line [1].The MI ratio $\Delta Z/Z$ was defined with respect to the value at the maximum field H_{max}=150 Oe: $\Delta Z/Z=100\times([Z(H)-Z(H_{max})]/Z(H_{max}))$. Although a significant reduction of the field sensitivity is found due to the increased effect of the stresses generated during preparation, the results are still satisfactory for use as magnetic field sensors in special applications.

Frequency dependence of the MI ratio for $[FeNi(170\ nm)/Ti(6\ nm)]_3/Cu(500$



$nm)/[Ti\ (6\ nm)/FeNi(170\ nm)]_3$ multilayer deposited onto glass and flexible substrates.

1. Kurlyandskaya G.V., de Cos D., Volchkov S.O. Magnetosensitive Transducers for Nondestructive Testing Operating on the Basis of the Giant Magnetoimpedance Effect: a Review // Rus. J. Nondestr. Test. 2009. V. 45, № 6. P. 377–398.

This work was developed under support of the “Laboratory of Physical Sensoric” project of Ural Federal University and ACTIMAT-ETORTEK grant of UPV-EHU and The Basque Country Government.