Preparation and study of U/Co multilayers

M.A.Rosa[a,b], M.Diego[a], M.Godinho[b],E.Alves[a] N.P.Barradas[a], M.Almeida[a], A.P.Gonçalves[a]

[a]Departamento de Química, Instituto Tecnologico e Nuclear, P-2686-953 Sacavém, Portugal

[b]Departamento de Fisica, Faculdade de Ciências da Universidade de Lisboa, Ed. C8, Piso-6, Campo Grande, P-1749-016 Lisboa, Portugal

9.7 cm

The behaviour of uranium multilayers has been so far almost unexplored. Most of the work done is still restricted to the pioneering study at the IBM, more than ten years ago, of some uranium amorphous films and multilayers in search for possible magneto-optic effects. With the aim of expanding the studies on this type of materials, U/Co multilayers were recently prepared by dc magnetron sputtering. Here we report on the preparation of U/Co multilayers and their magnetic characterization. The depositions were performed onto glass at room temperature, using two different current values, the thickness of each layer ranging from 50-200 Å. Rutherford backscattering spectrometry (RBS) was used to check the thickness and the interfacial roughness of the deposited layers. The magnetic properties were measured using a SQUID magnetometer. RBS measurements indicate that the layers have a roughness or mixing depth of a few tens of Åthat increases with the increasing thickness. The multilayers have a ferromagnetic behaviour bellow 300K, with a saturation magnetization increasing with the layer thickness. The easy magnetic direction is on the plane of the films and the anisotropy field increases with the thickness of the layers.

13.4 cm

Subject category :

2. Magnetic Films, Surfaces and Multilayers

Presentation mode :
poster

Corresponding author :
M.A.Rosa

Address for correspondence :
Departamento de Fisica,
Faculdade de Ciências da Universidade de Lisboa,
Ed. C8, Piso-6, Campo Grande,
P-1749-016 Lisboa, Portugal

Email address :
marosa@fc.ul.pt