EMCMRE-1
Marrakech-Morocco
November 21-25 2011

First Euro-Mediterranean Conference on Materials and Renewable Energies (EMCMRE-1) 21-25 November 2011

RBS analysis of thermal aged polyimide thin film at high temperature

Maher Soueidan[1,2], Bilal Nsouli[1], Mohamad Roumié[1], Sayyed Abboudy[3], Rabih Khazaka[4] and Marie-laure Locatelli[4]

[1] *IBA laboratory, Lebanese Atomic Energy Commission – CNRS, P.O. Box: 11-8281 Beirut –Lebanon,*
[2] *INSA de Lyon, AMPERE-UMR 5005, Bât. L. de Vinci, 21, Av. J. Capelle, 69621 Villeurbanne – France,*
[3] *Faculty of Science, Beirut Arab University, Beirut P.O,Box 11-5020, Beirut Lebanon*
[4] *Université de Toulouse; LAPLACE; 118 route de Narbonne, F-31062 Toulouse cedex 9, France*

E-mail : msoueidan@cnrs.edu.lb

Abstract:

Polyimides (PIs) are widely used in electronic applications wherein high temperature operating devices are needed. Like other polymers used in high temperature and in ambient atmosphere, polyimides are subject to the thermal and thermo-oxidative degradation. The effect of the thermo-oxidative aging can lead to the degradation of the dielectric properties and then the device failure.

RBS Technique were employed to monitor the behaviour of the polyimides thin films as affected by thermal aging at high temperature (300℃) in oxidative ambi ent for a period of time ranging from 0h to 1500h, in order to correlate with the dielectric properties. It was found that, with the aging time, the PIs films thickness were decreased. From the RBS spectra, we can deduce that the concentration of the PIs main elements (C, 0, N) change slightly with time. Some additive elements like Si and oxygen were found on the top of the PIs thin films and the concentration of this elements increase with the aging time. The correlation between the RBS results and the dielectric losses will be discussed in the full paper