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P. Hirchenhahn[a,d], A. Al-Sayyad[b], J. Bardon[c], P. Plapper[b], L. Houssiau[a], C. Guyot[d], T. Maindron[d], B. Gilquin[d], J.-P. Barnes[d].

a University of Namur, Namur Institute of Structured Matter (NISM), LISE, Namur Belgium, laurent.houssiau@unamur.be

b University of Luxembourg, Research Unit in Engineering Science, Luxembourg Luxembourg, peter.plapper@uni.lu, adham.alsayyad@uni.lu

c Luxembourg Institute of Science and Technology, Esch-sur-Alzette Luxembourg, julien.bardon@list.lu

d Univ. Grenoble Alpes, CEA, Leti, F-38000 Grenoble, France, pierre.hirchenhahn@cea.fr, claire.guyot@cea.fr, tony.maindron@cea.fr, benoit.gilquin@cea.fr, jean-paul.barnes@cea.fr

To address the ongoing problem of climate change, the transport industry is seeking ways to reduce energy consumption, hence decreasing pollution emissions. At the same time, the biomedical industry is looking for more biocompatible materials, in order to design new implants or prosthesis. To tackle these two different issues, the use of hybrid materials, especially hybrid polymer-metal assemblies, is gaining more and more popularity. Nonetheless, assembling such different materials remains a challenge. From the three assembling techniques, only welding offers satisfying results. Amongst the high variety of welding techniques, laser welding is catching more and more attention. Indeed, the laser welding process is quick. It does not require any surface preparation, and can be easily automated, which further increases its speed. It also presents a high design freedom in size but also in form. Even if laser welding is a promising technique, the root causes of adhesion are still not completely understood. This work aimed at addressing this question by analyzing two combinations of materials: polyamide-6.6/aluminum, and polyamide-6.6/titanium, by combining XPS and ToF-SIMS measurements [1].

ToF-SIMS is an excellent tool for surface chemical characterization, and has been recently adapted to perform tandem MS measurements [2,3]. Therefore the ionization of heavier fragments becomes crucial, especially when analyzing biological or polymeric samples. The use of matrices is one way to increase the total ion yield, as well as the ionization, hence the intensity, of the fragments of interest. The applicability of matrices commonly used for MALDI has already been demonstrated as efficient for biological samples [4], but their use for OLED materials has never been reported. The goal is to optimize the use of matrices for OLED materials in ToF-SIMS measurements, which will help to better understand the ageing of these devices and so possibly help to increase their time of life. Therefore several classical matrices are tested on references of the different OLED layers, in order to find the best fitting matrix.

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