



PHOTOEMISSION FROM LIQUID Li-Pb ALLOYS

D. Colbourne, M. Gardiner, J. Krizek, C. Norris

► To cite this version:

D. Colbourne, M. Gardiner, J. Krizek, C. Norris. PHOTOEMISSION FROM LIQUID Li-Pb ALLOYS. Journal de Physique Colloques, 1980, 41 (C8), pp.C8-422-C8-422. 10.1051/jphyscol:19808104 . jpa-00220199

HAL Id: jpa-00220199

<https://hal.science/jpa-00220199>

Submitted on 4 Feb 2008

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

PHOTOEMISSION FROM LIQUID Li-Pb ALLOYS

D. Colbourne, M.K. Gardiner, J. Krizek and C. Norris

Department of Physics, University of Leicester, Leicester LE1 7RH, Grande-Bretagne.

Abstract. A photoelectron spectrometer has been developed for the measurement of liquid metals and alloys which are volatile and have melting points up to 1500°C . Low energy ($h\nu = 21.2\text{ eV}$) photoemission spectra are presented for liquid $\text{Li}_x\text{Pb}_{1-x}$ alloys for $0 \leq x \leq 0.67$. For $x \simeq 0$ they confirm the deviation from the nearly free electron picture characteristic of heavy polyvalent metals (1) showing separated 6s and 6p bands. At higher Li concentrations a broad peak appears at 2.6 eV below the Fermi edge, near the bottom of the Pb 6p band, which is tentatively associated with a bonding state. The Pb 6s band, which lies below -5 eV, is not significantly affected by alloying. The binding energy of the Pb $5d_{5/2}$ level was determined for all compositions. It is suggested that the small shift 0.3 eV towards the Fermi level does not accord with a simple ionic model which involves the complete filling of the Pb 6p shell as the stoichiometric composition Li_4Pb is approached.

Reference

1. Wotherspoon J.T., Rodway, D.C. and Norris, C., 1980, Phil. Mag. B40, 51.