E 13 INTERFACING OF A MINICOMPUTER TO AN ELECTRON SPECTROMETER

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In conventional electron spectrometers[1] most spectrometer functions are controlled manually and the data are collected in multichannel analysers. The data analysis requires the subsequent use of a computer. This set-up imposes severe restrictions on the functioning and the flexibility of the spectrometer. For example, the scan width can be increased only at the expense of resolution and only one energy range can be studied at a given time. It is also extremely time consuming.

Most of these restrictions can be eliminated by controlling the spectrometer functions by a computer and this also has the added advantage of convenient on the spot data analysis.

A PDP-8 minicomputer was interfaced successfully to a gas phase x-ray photoelectron spectrometer. With this set-up, almost all the spectrometer functions were controlled by the computer and a five-fold increase in scan-width could be achieved with no loss of resolution. Also up to three energy ranges could be investigated simultaneously. In addition, the same computer could be used to analyse the collected data and control the data output including the spectrum plotting resulting in a considerable time-saving.

Reference

1. Siegbahn, K. (1974) J. Electron Spectrosc. Rel. Phenom 5 3.