

X-Ray Photoelectron Spectroscopy



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XPS is a surface-sensitive quantitative spectroscopic technique that measures the elemental composition that consists within a material.

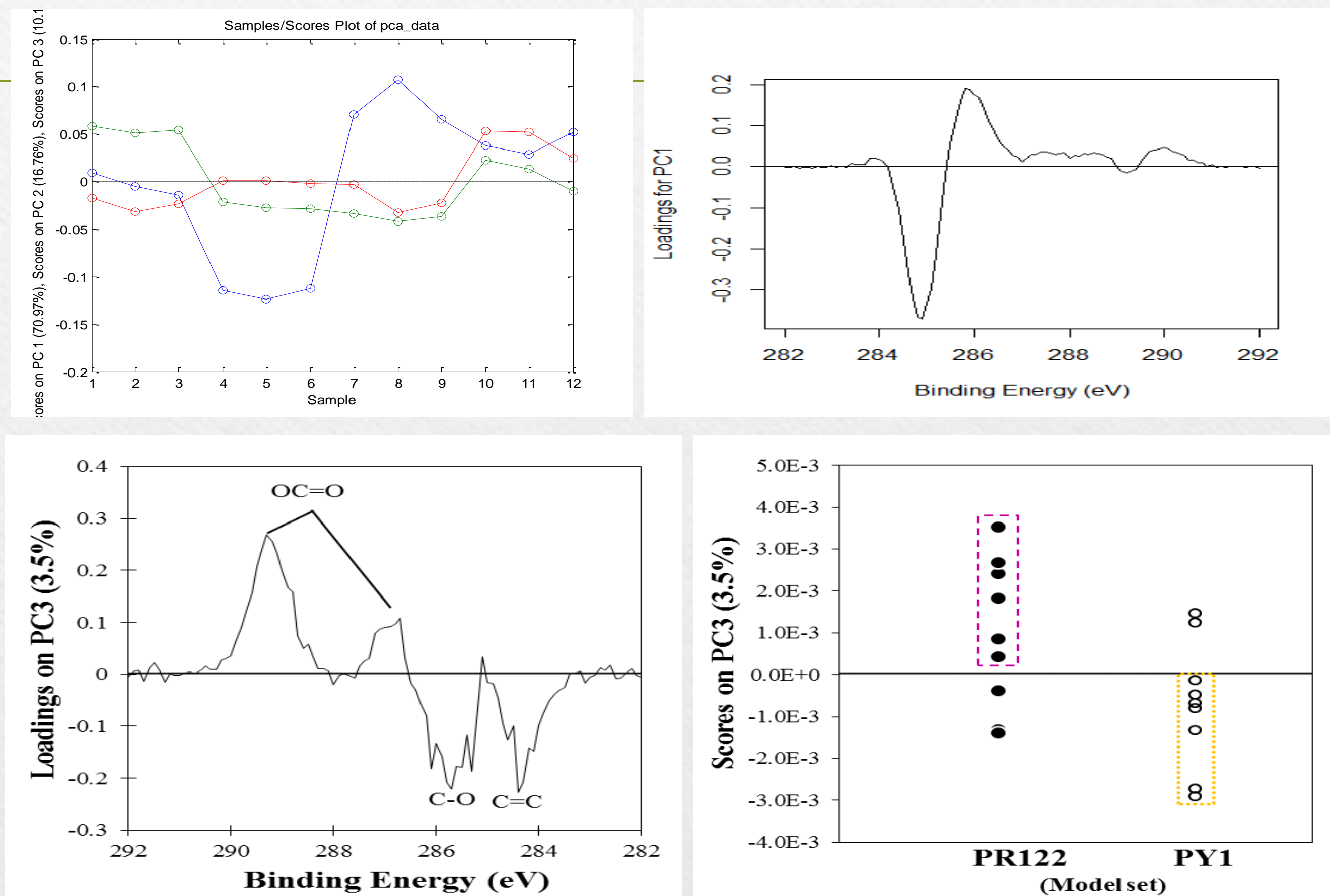
Aim

- Analyse the spectrum produced by XPS machine.
- By using a statistical method and relevant software to analyse the spectrum.

Method:

- Use of principle component analysis for the spectral analysis.
- Principal Component Analysis, or simply PCA, is a statistical procedure concerned with elucidating the covariance structure of a set of variables.
- In computational terms the principal components are found by calculating the eigenvectors and eigenvalues of the data covariance matrix.
- The plot of the principle components gives the better understanding of the spectrum.

Graphs after spectrum analysis



Conclusion:

- The blocks written can now be used for basic principle component analysis.
- The blocks can be further developed to automatically analyse and compare the graphs produced with stored set of data .

References:

ordination.okstate.edu/PCA.htm

www.mathworks.com/help/toolbox/stats/princomp.html