

# Zn coatings

This application shows the ability to quantify depth profile analysis made with an RF source.

The sample is a Zn electroplated steel sheet, coated with a thin aluminium layer. This type of coating is used in the automotive industry against the corrosion phenomena.

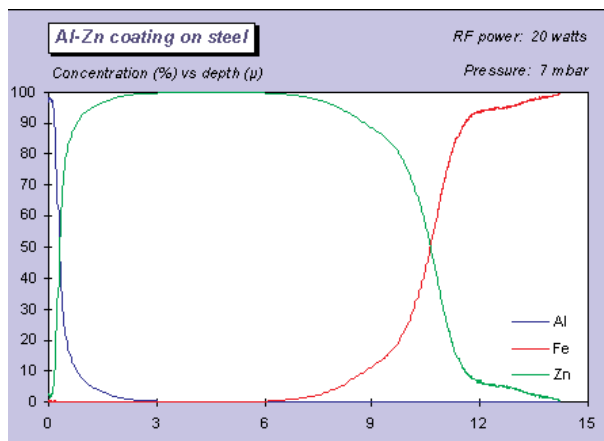
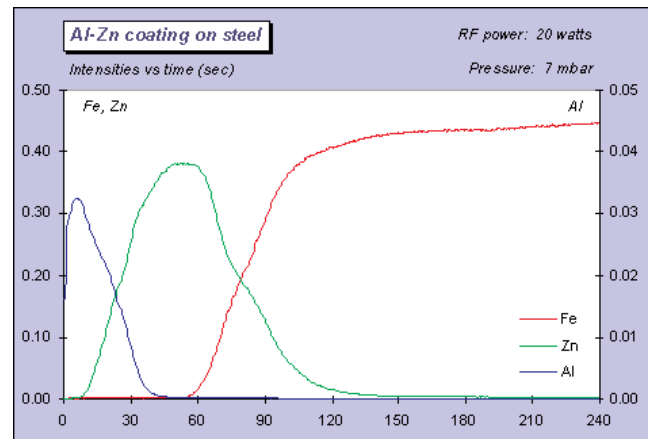
The analysis has been achieved with a 4 mm diameter anode. The analytical parameters have been chosen in order to obtain a good depth resolution while keeping the sample cool (10°C). The PM voltages are automatically adjusted with the HDD system (HDD: High Dynamic range Detector) during data acquisition.

## QUALITATIVE ANALYSIS

The qualitative analysis leads to a diagram Intensity (arbitrary unit) vs time (sec).

Due to the large dynamic on Y scale, the elements have been dispatched on two scales: Fe, Zn on the left side, Al on the right one.

The different layers clearly appear and give a good idea of the element distributions. But their sputtering rates are very different (typically: Al "2 μ/mn, Fe "3 μ/mn, Zn "11 μ/mn).



The quantitative computation needs a previous calibration for all elements which is achieved from some standard samples (pure metals or alloys). This

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calibration takes in account the sputtering rates of the standards and their specific gravities, as the results are given in % weight.