

XRF ANALYSIS OF AUTOMOTIVE CATALYSTS BY FLUX/FUSION

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Briquettes of ground automotive catalysts present an excellent example of the problem of elemental segregation in powders (mineralogical effect) that can lead to erratic XRF analyses. As a result, no general calibration method is available that will yield reliable results for a wide range of catalyst formulations. The classic solution to this general problem is the method of flux/fusion. Unfortunately, automotive catalysts utilize large quantities of precious metals (Pt, Pd, Rh) for their functionality, and these elements present difficulties for standard borate flux/fusion techniques. At typical fusion temperatures (1100°C), the precious metals are all reduced and show a strong tendency to agglomerate and alloy with the crucible walls. This effect is very pronounced in our automated fusion machine that agitates a crucible over a gas flame. I will describe a fusion technique that overcomes the problem of precious metal alloying and that yields good results for the broad range of elements found in modern automotive catalysts.