BASF
We create chemistry

XRF and ICP-OES analysis: A winning combination

Automotive catalytic converter recycling with BASF Environmental Catalyst and Metal Solutions (ECMS)

When you recycle automotive catalysts with BASF ECMS, we use a combination of XRF analysis and ICP-OES analysis to provide fast payments and accurate results.

What is XRF analysis?

X-ray Fluorescence (XRF) spectroscopy is an efficient, economical method for analyzing solids and powders. This preliminary technique allows us to quickly assess the PGM and matrix elements of your materials without complex processing.

What is ICP-OES analysis?

Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES) analysis is a highly accurate set of analytical techniques used to determine many different types of elements. Because it usually requires samples to be in liquid form, ICP-OES involves acid digestion and longer sample preparation. The process can take up to 5 days.

BASF ECMS's process: The best of both worlds

First, we run an XRF analysis of your material at our production site and our global offsite labs to ensure lot and sample integrity. Once our commercial team gets a quick estimate of your material composition, we can provide the majority of your payment in advance, then follow up in a few days with the ICP-OES results to verify and settle the difference.

In short, that means you get paid faster while still receiving the most accurate results possible.

At BASF ECMS, our top priorities in the assaying process are safety, quality, and the integrity of your material. It is important to note that an abundance of interference elements can cause variability in PGM results during XRF analysis; this is why weuse ICP-OES for final analysis and settlement.

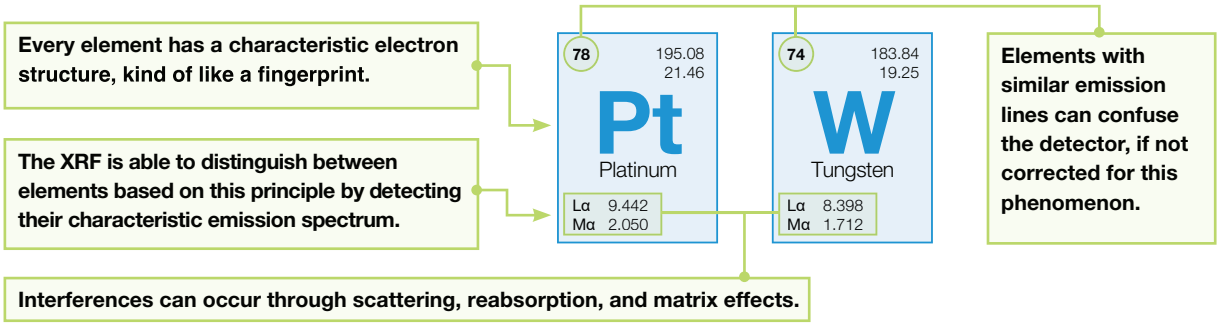
What causes deviations in XRF results?

XRF is a common technique used to determine the elemental makeup of a material. This method is useful for semi-quantitative preliminary analysis, but it can be prone to interference because the PGMs are coalesced with a large amount of other elements.

Why? In XRF analysis, the sample is excited with X-ray energy, some of which is absorbed by the elements present in the material. These elements then release this energy in a characteristic pattern called a spectrum, which is unique to each element. The instrument detects the unique signature of each element and the intensity of the energy, which gives us the element's identity and concentration.

For some elements, these energies are very close in value, causing the instrument some confusion as to which one is emitting the spectrum. Our calibration models take this into account and allow us to deconvolute these interferences.

How does interference occur?



In this case, an abundance of tungsten could interfere with platinum results.

Why do we combine methods?

To avoid inaccuracies in the final results, BASF ECMS performs a full ICP-OES analysis after the preliminary XRF.You can get paid quickly after the initial analysis, then receive a confirmation of results through the more time-consuming yet reliable ICP-OES method. Then our team will settle the remainder of your payment.

Want to know more about the ISO-accredited analytical methods we use in the automotive catalyst recycling process? **Contact a BASF ECMS expert today.**

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