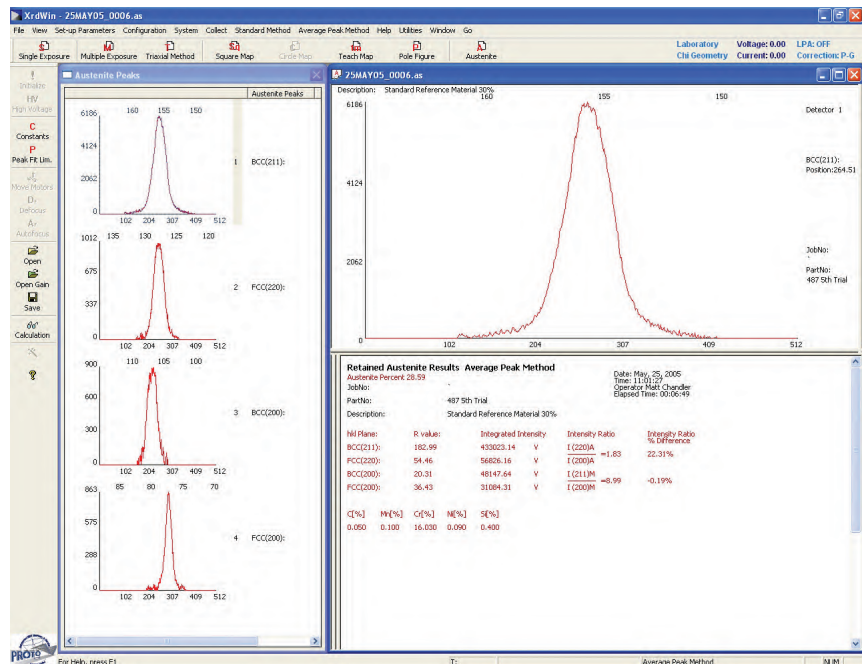


# XRD Retained Austenite Measurement



Portable iXRD system for measuring retained austenite

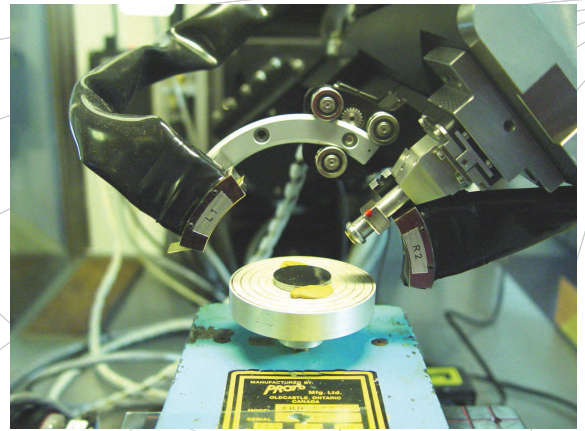


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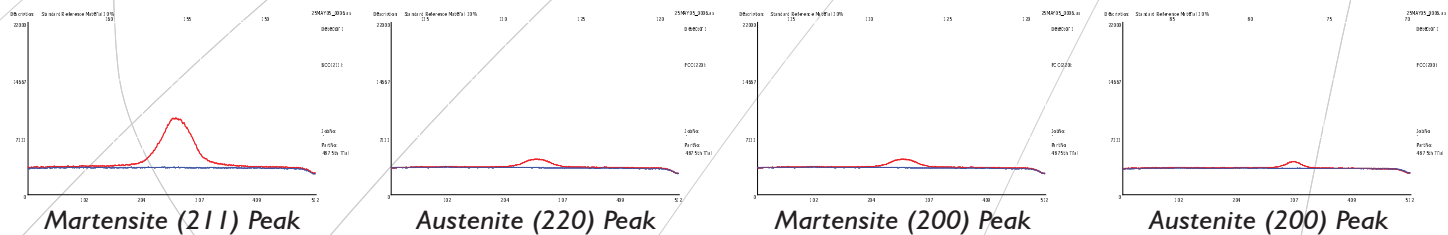
# XRD Retained Austenite Measurement

## Retained Austenite (RA)

Austenite is a face centered cubic (FCC) phase present in steel at high temperature. Upon cooling, most of the steel is transformed into ferrite - a body centered cubic (BCC) phase, or into martensite - a body centered tetragonal (BCT) phase. Depending on the cooling parameters and alloying content some percentage of the steel (typically 0-40%) will remain as austenite, hence the term "retained austenite". The amount of retained austenite present can play a significant role in the performance, dimensional stability and longevity of a steel component. X-ray diffraction (XRD) can accurately measure retained austenite concentrations as low as 0.5%. To characterize the concentration of retained austenite using XRD four diffraction peaks are collected by the instrument, two for the ferrite/martensite phase and two for the austenite phase. A comparison of the intensities of the 4 peaks yields the volume percent concentration of retained austenite in the sample.

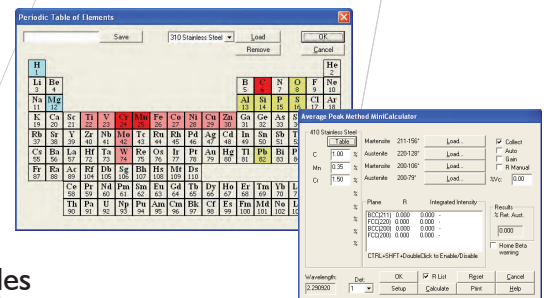


LXRD system measuring retained austenite



## X-ray Diffraction (XRD) Measurement Features

- 4 Peak retained austenite measurement as per SAE SP-453
- R-value calculator integrated into XRDWIN
- Fully automated detector movements
- Deconvolution of carbide overlap peaks
- No changeover required between stress and RA measurement modes
- High power LXRD system for characterizing concentrations of RA as low as 0.5%
- Portable iXRD system for characterizing RA in-situ on large components
- Sample spinners for improved averaging
- Typical measurement time is 5 minutes per sample



R-Value Calculator in XRDWIN

[www.protoxrd.com](http://www.protoxrd.com)

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