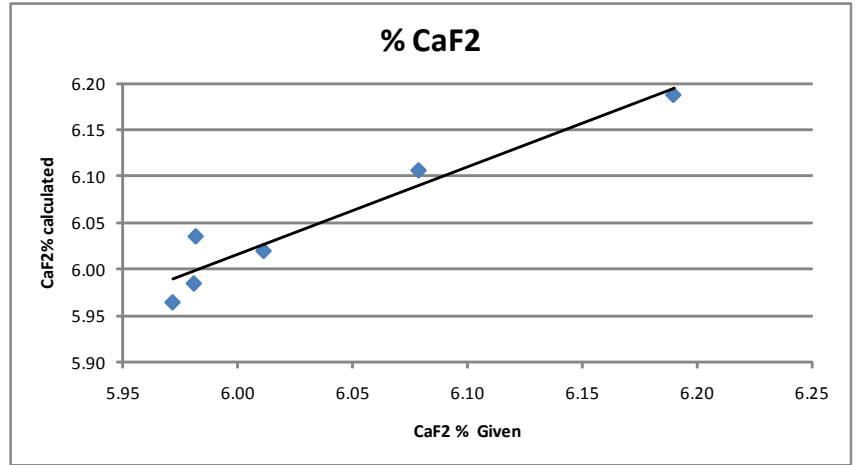


BTX Application Summary

Rapid determination of CaF2 and Bath Ratios by XRD/XRF

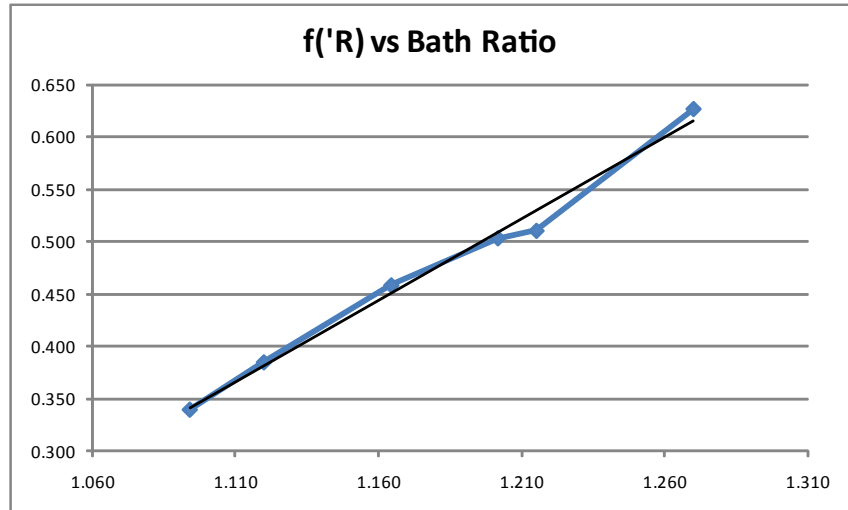
Sample	% CaF2	
	Actual	BTX
A	5.96	5.97
B	6.04	5.98
C	6.11	6.08
D	5.99	5.98
E	6.02	6.01
F	6.19	6.19



BTX is both an XRF spectrometer and an X-ray Diffractometer. As such, the instrument is well suited to the unique requirements of determining the constituents of bath ratios. As shown above, the XRF portion of the instrument calculates the %CaF2 by measuring Ca-Ka photons, while simultaneously determining the phases from the XRD portion of the instrument.



Analysis time: 180 seconds
 % CaF2 by EDXRF
 Bath Ratio by XRD
 Easy Sample prep
 no grinding or pellets
 No moving parts



Bath Ratio Dataset							
Sample	BR	Cryolite	Chiolite	Ca-Cryolite	f('R)	Predicted BR	Error
A	1.094	960.6	1495.9	367.7	0.340	1.094	0.000
B	1.120	1054.8	1334.3	348.9	0.385	1.123	0.003
C	1.164	1182.8	1061.2	334.8	0.459	1.170	0.005
D	1.202	1289.1	933.4	337.4	0.504	1.199	-0.003
E	1.215	998.3	710.6	246.1	0.511	1.203	-0.012
F	1.270	1373.9	584.5	233.5	0.627	1.278	0.008
SEE							0.00785

BTX features & benefits

Unique features & benefits of BTX

Thanks to years of design efforts on the part of NASA, inXitu inc. is pleased to offer a patented design which brings several unique features and resulting benefits to many applications. From easy sample preparation to simultaneous XRD/XRF measurements, BTX represents a leap forward in the design and subsequent availability of a new class of analytical instruments



BTX requires loose powders of <math><100\mu\text{m}</math>. This is easily achieved using a simple crusher and sample sieve.



BTX feature	Benefit	Comments
No moving parts	Increased reliability, reduced service requirements, no calibration	All other XRD instruments use a mechanical goniometer which requires calibration and maintenance
CCD based x-ray detection		
Simultaneous x-ray photon detection	Faster analysis	All other XRD instruments scan across an angular range (sequential)
Energy sensitive analysis: Discrimination of those x-ray photons not used for XRD analysis	Higher sensitivity, lower limits of detection for a given mineral/phase	Comparative priced alternatives do not use energy discrimination.
Energy sensitive analysis: X-ray fluorescence measurement	Elemental analysis (Ca-U)	No other available XRD instruments offer concurrent elemental analysis
Patented sample vibration chamber	Easy/fast sample preparation, small sample size requirement (~50mg)	All other XRD instruments require complex sample preparation for similar results
Low Power X-ray source	Long life – estimated to last life of the instrument (10 yrs)	All other XRD instruments expect x-ray tube replacement every 2-4 years.
Small size, light weight	Easy to transport, low service costs.	Return to depot repair service; hard shell case available for transportation.