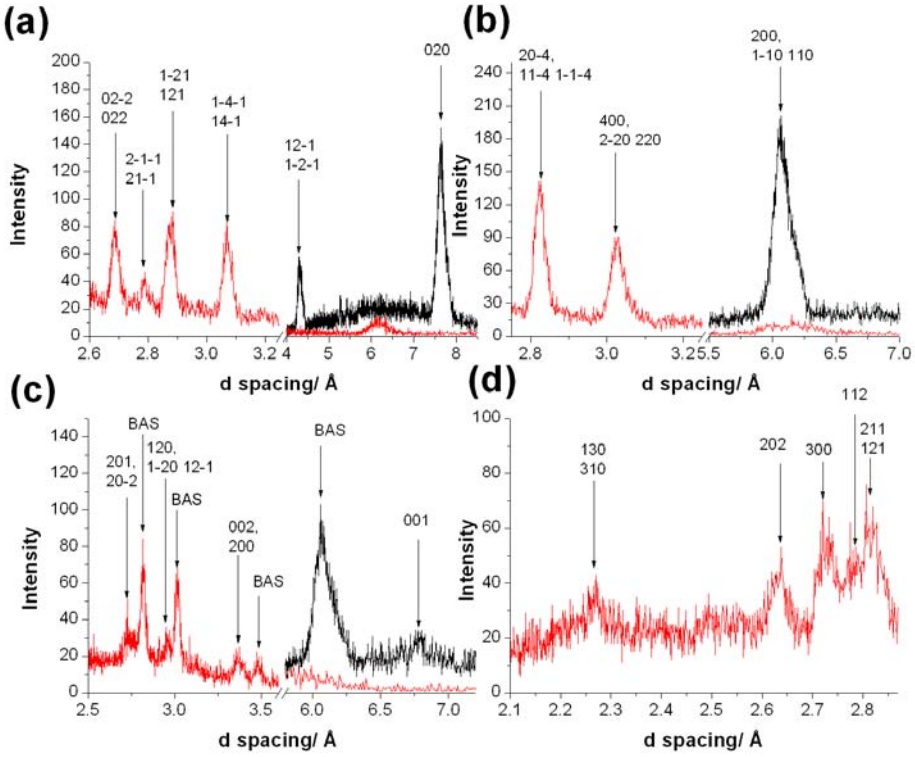
Supporting information for the submission titled: 'Time and Position Resolved *in situ* X-ray Diffraction Study of the Hydrothermal Conversion of Gypsum Monoliths to Hydroxyapatite by Robin D. Fisher and Richard I. Walton.

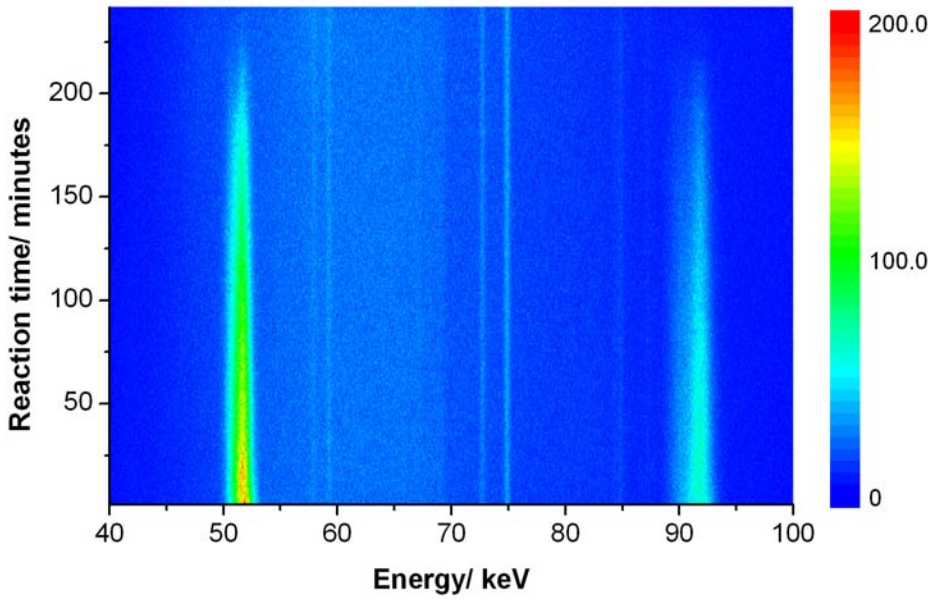
Reference spectra

EDXRD spectra of materials seen during the *in situ* experiments (a) gypsum – E4, 5 minutes (b) bassanite – E4, 23 minutes (c) monetite C4 – 452 minutes and (d) hydroxyapatite – E4, 101 minutes where – = bottom detector and – = middle detector, with hkl values labelled.

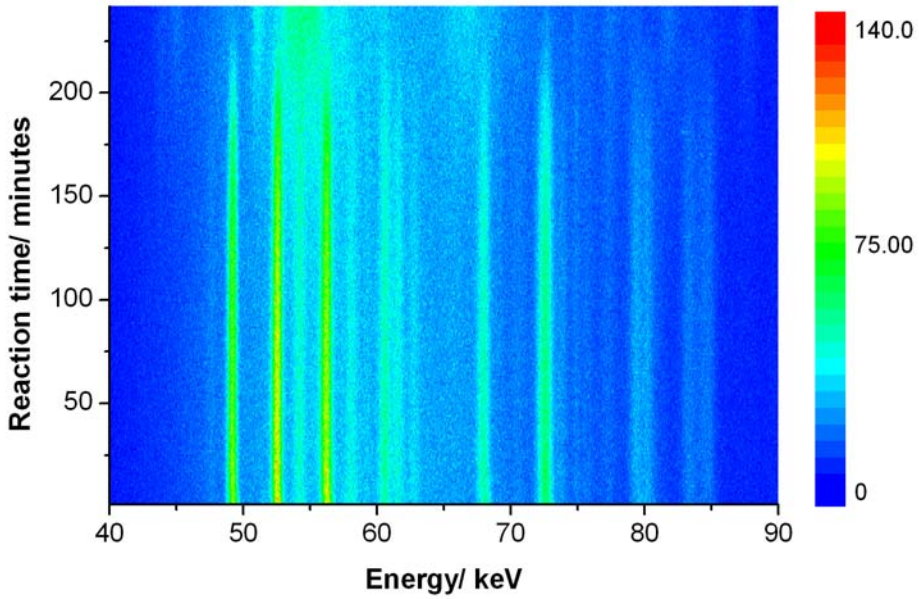


100°C, Edge

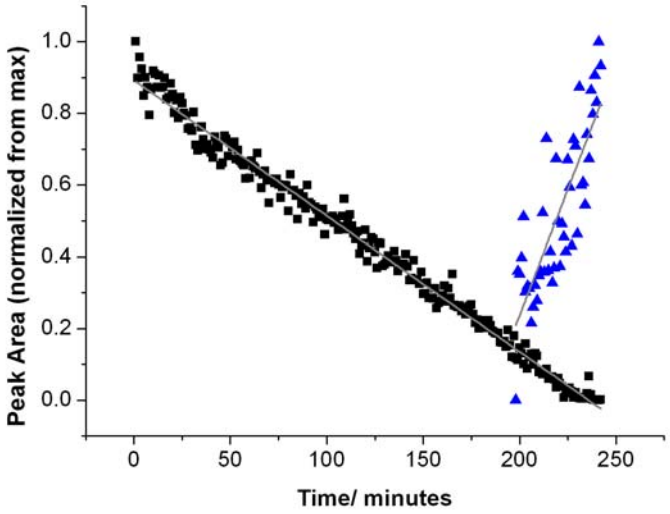
Contour plot of 100°C reaction on the edge, bottom detector.



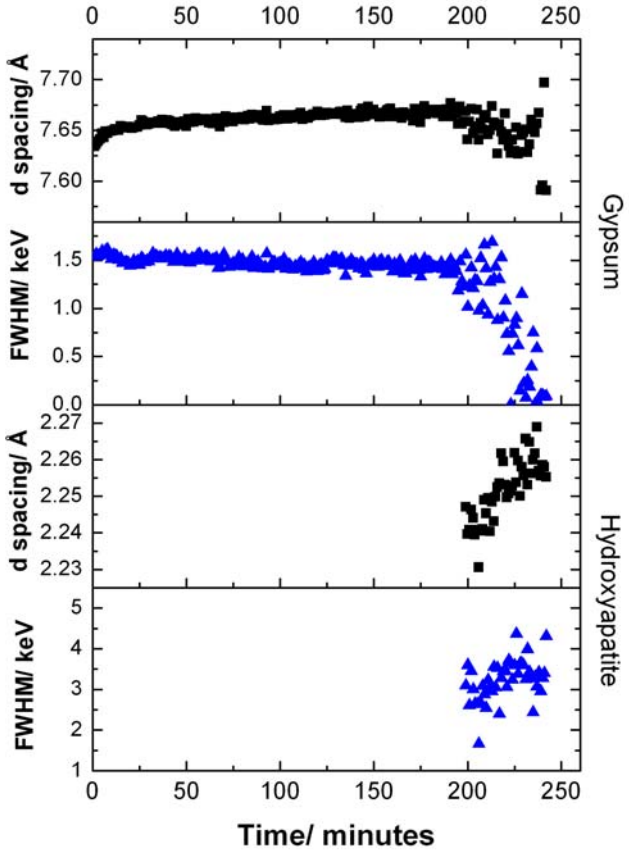
Contour plot of 100°C reaction on the edge, middle detector.



Kinetic plot of phases at 100°C on the edge, where ■ = gypsum and ▲ = hydroxyapatite.

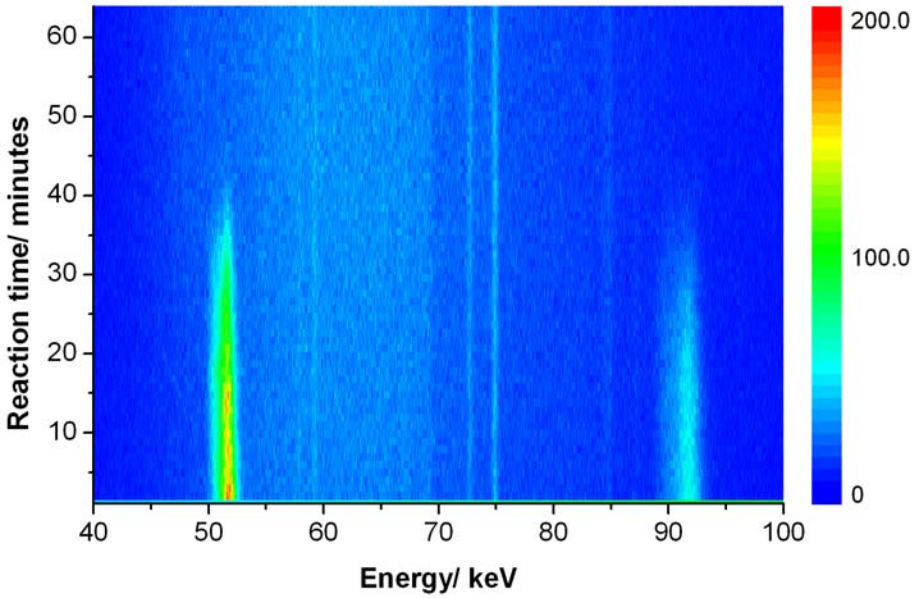


Peak position and peak width for the reaction at 100°C on the edge, where ■ = d spacing (Å) and ▲ = peak width (keV).

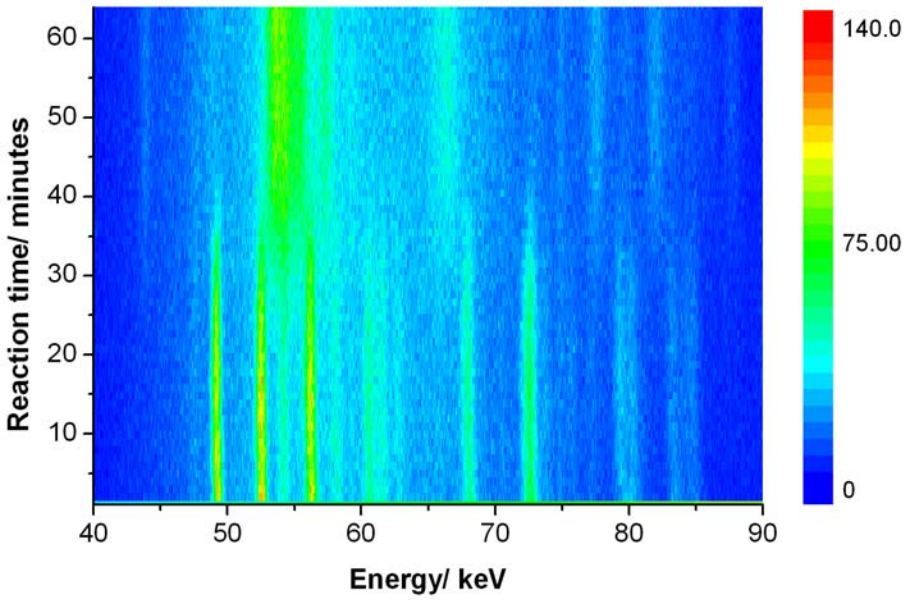


120°C, Edge

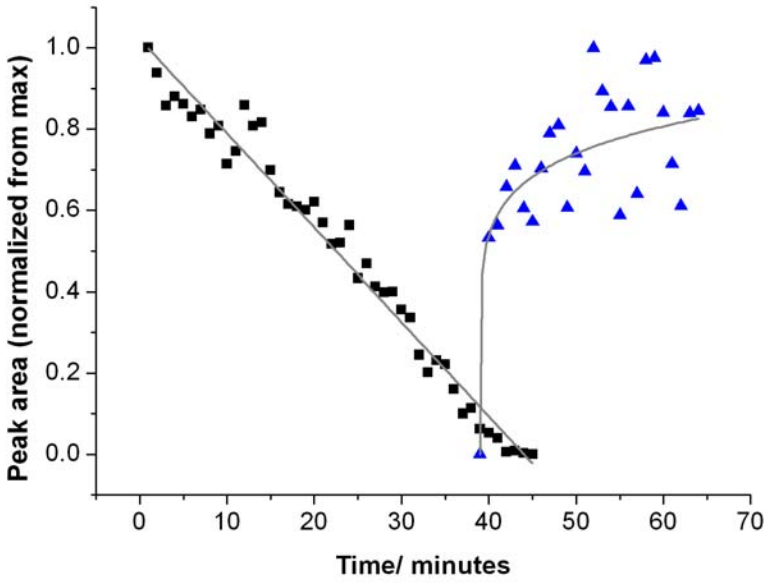
Contour plot of 120°C reaction on the edge, bottom detector.



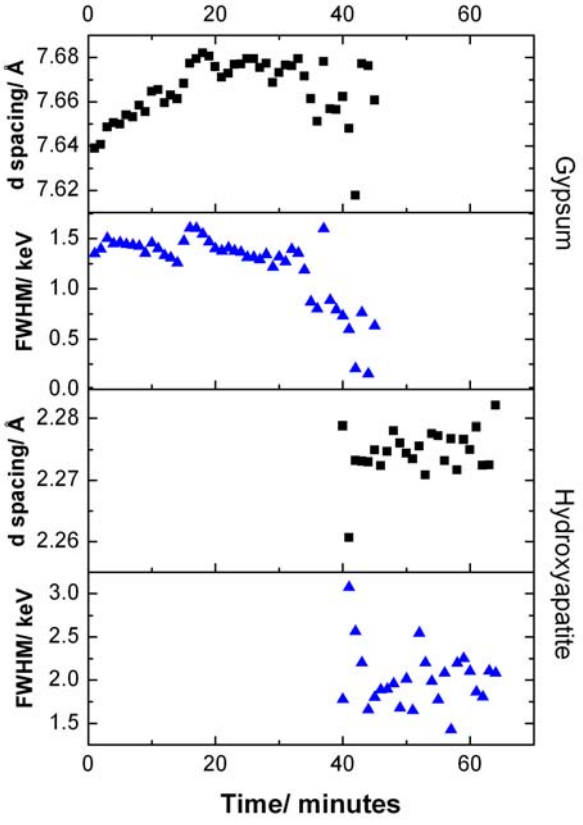
Contour plot of 120°C reaction on the edge, middle detector.



Kinetic plot of phases at 120°C on the edge, where ■ = gypsum and ▲ = hydroxyapatite.

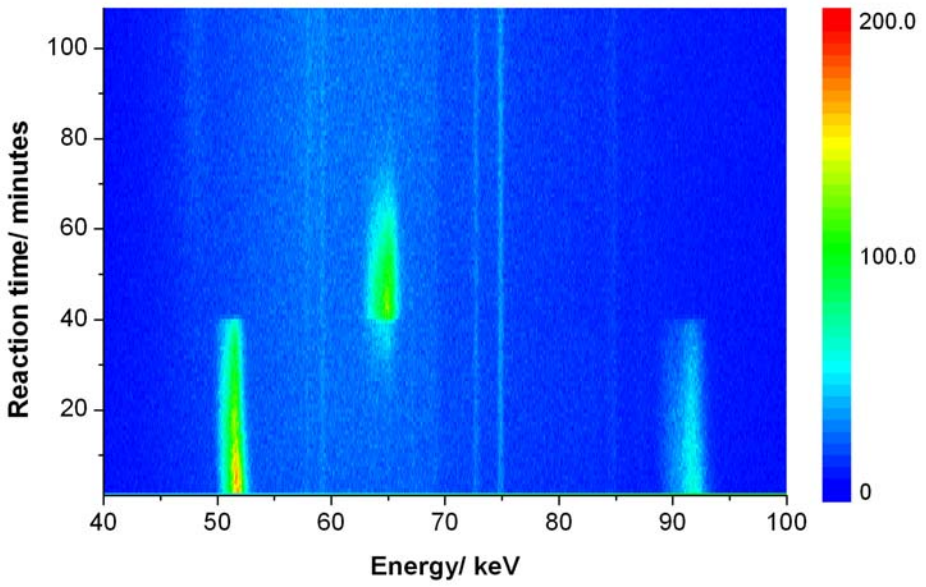


Peak position and peak width for the reaction at 120°C on the edge, where ■ = d spacing (Å) and ▲ = peak width (keV)

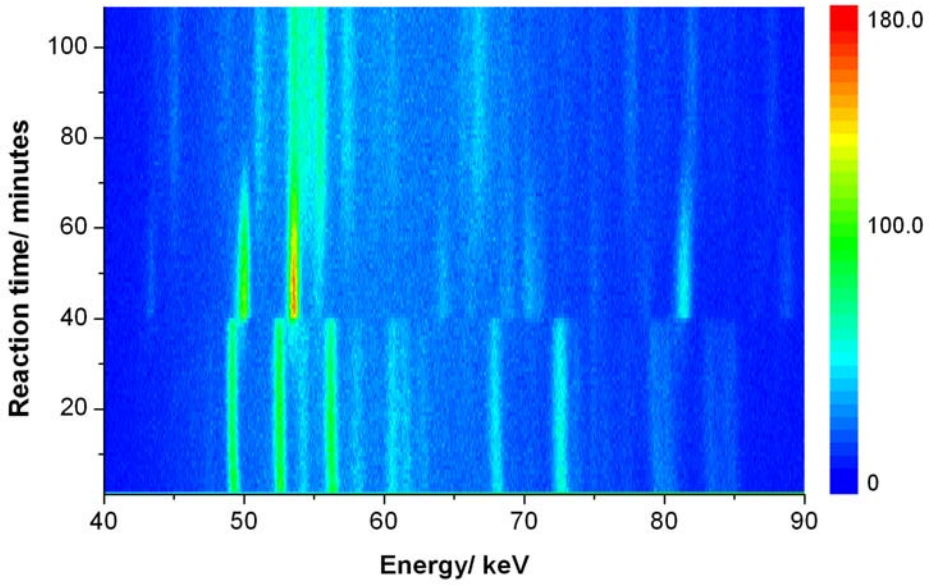


130°C, Edge

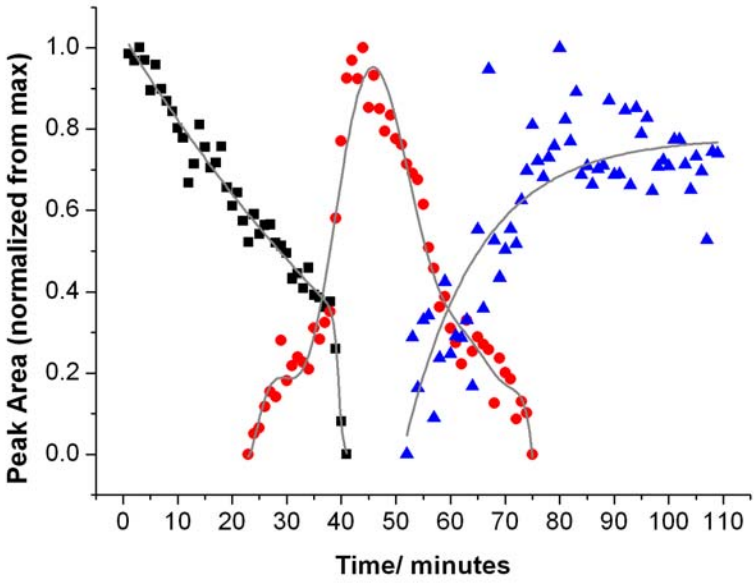
Contour plot of 130°C reaction on the edge, bottom detector.



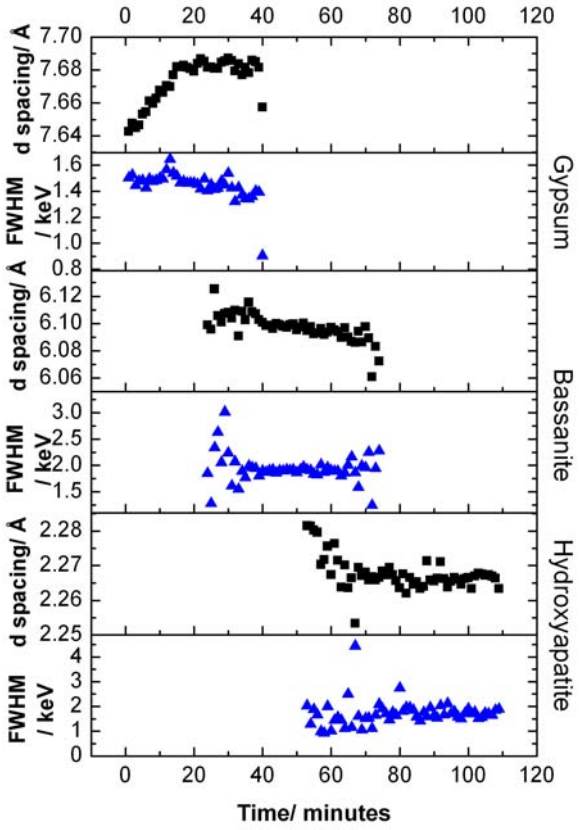
Contour plot of 130°C reaction on the edge, middle detector.



Kinetic plot of phases at 130°C on the edge, where ■ = gypsum, ● = bassanite and ▲ = hydroxyapatite

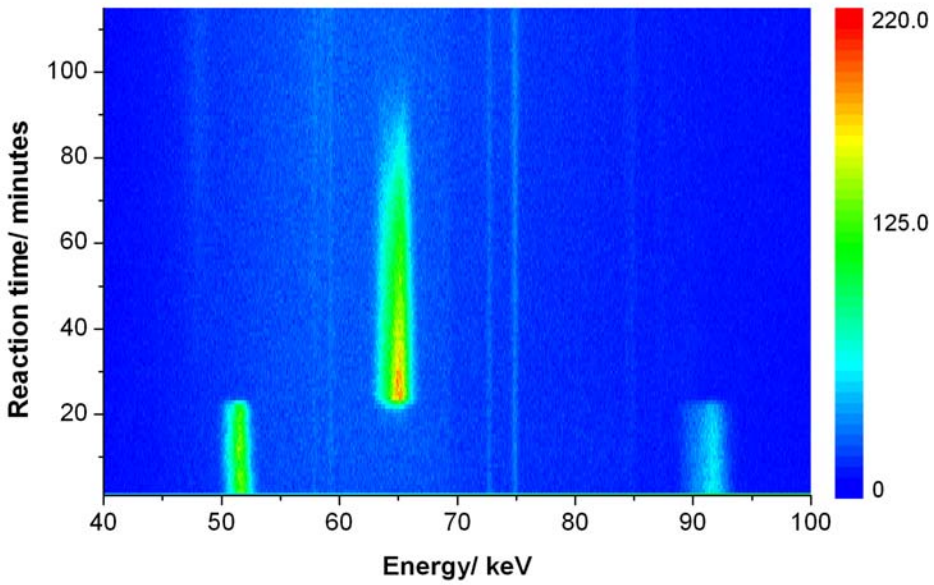


Peak position and peak width for the reaction at 130°C on the edge, where ■ = d spacing (Å) and ▲ = peak width (keV).

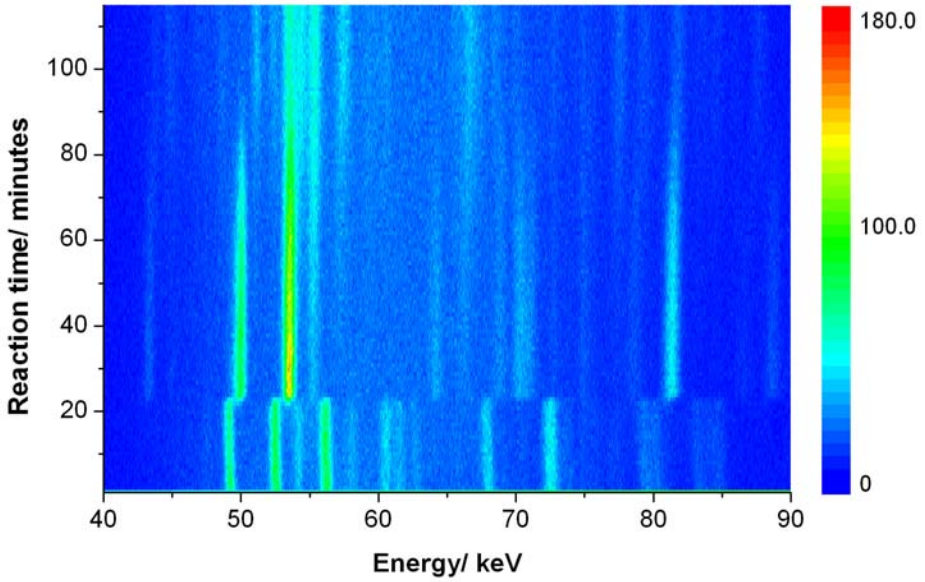


140°C, Edge

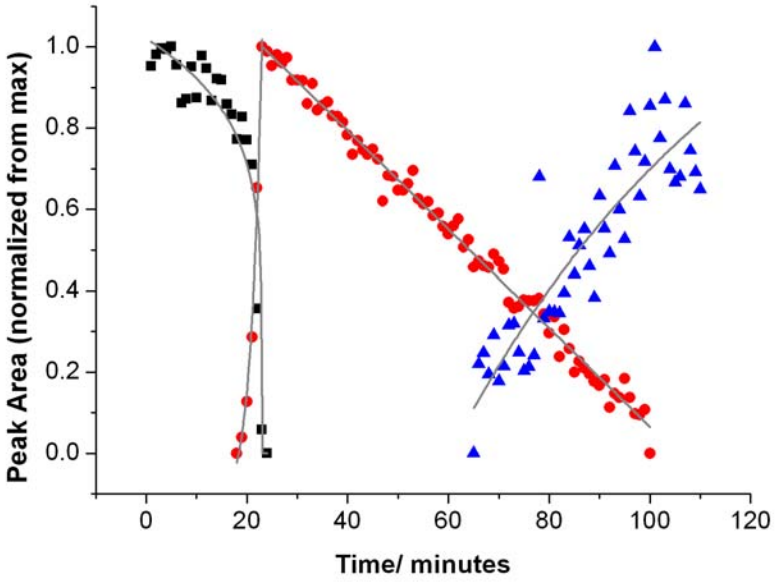
Contour plot of 140°C reaction on the edge, bottom detector.



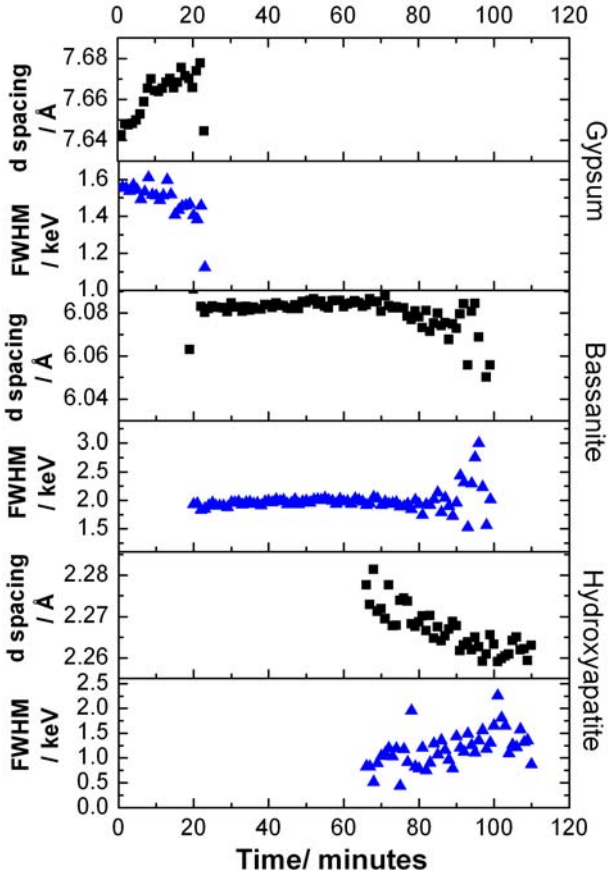
Contour plot of 140°C reaction on the edge, middle detector.



Kinetic plot of phases at 140°C on the edge, where ■ = gypsum, ● = bassanite and ▲ = hydroxyapatite.

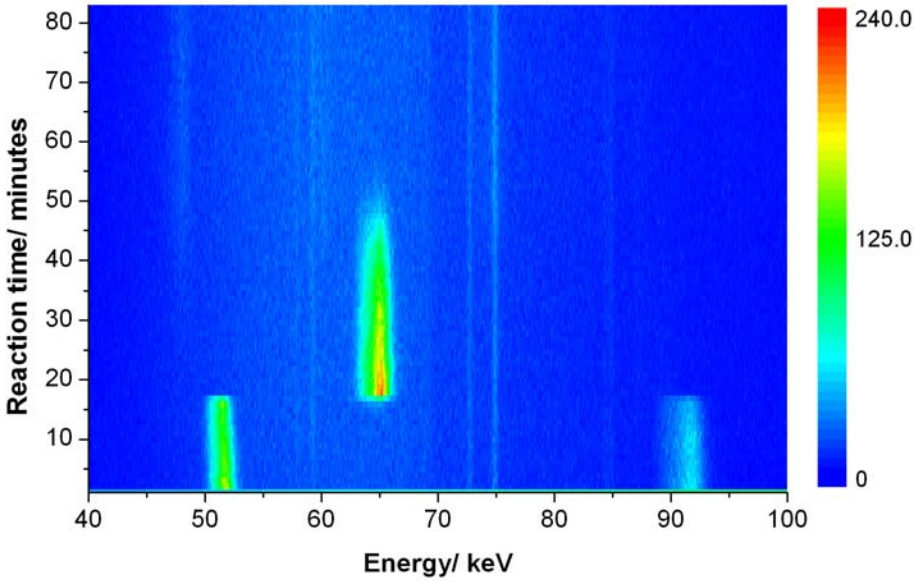


Peak position and peak width for the reaction at 140°C on the edge, where ■ = d spacing (Å) and ▲ = peak width (keV).

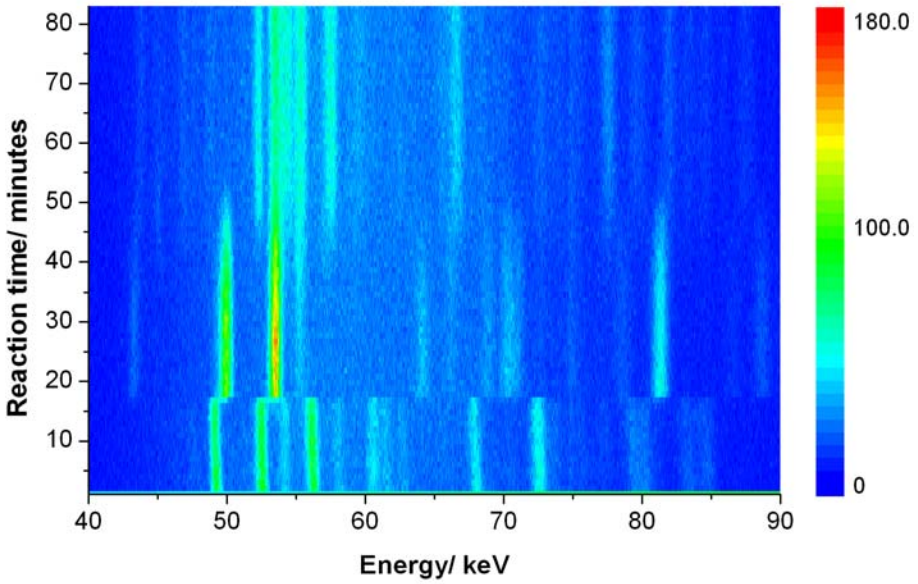


160^{o}C, Edge

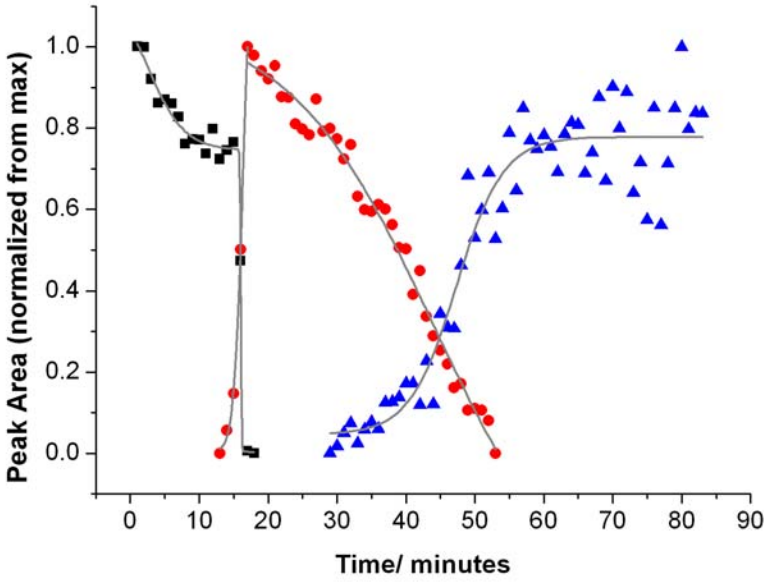
Contour plot of 160^{o}C reaction on the edge, bottom detector.



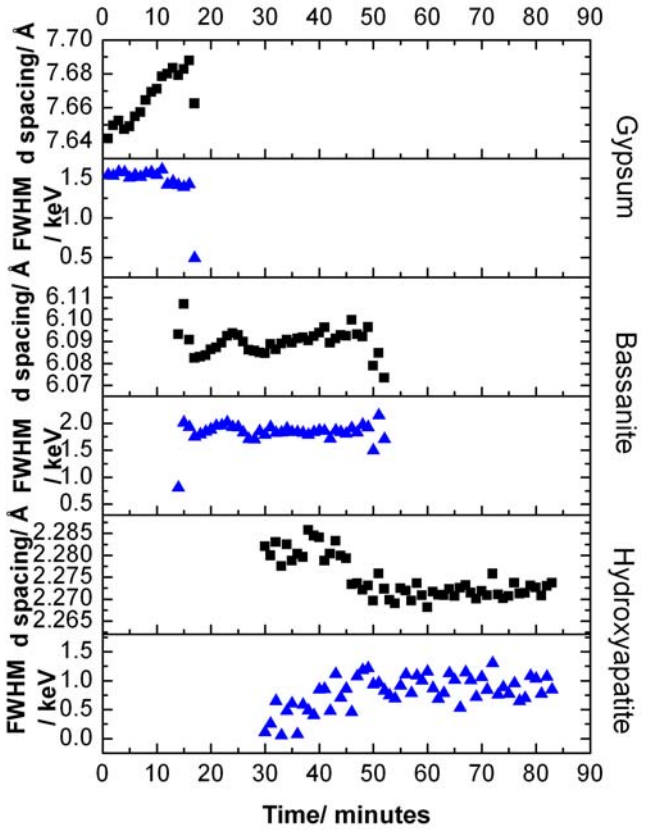
Contour plot of 160^{o}C reaction on the edge, middle detector.



Kinetic plot of phases at 160°C on the edge, where ■ = gypsum, ● = bassanite and ▲ = hydroxyapatite.

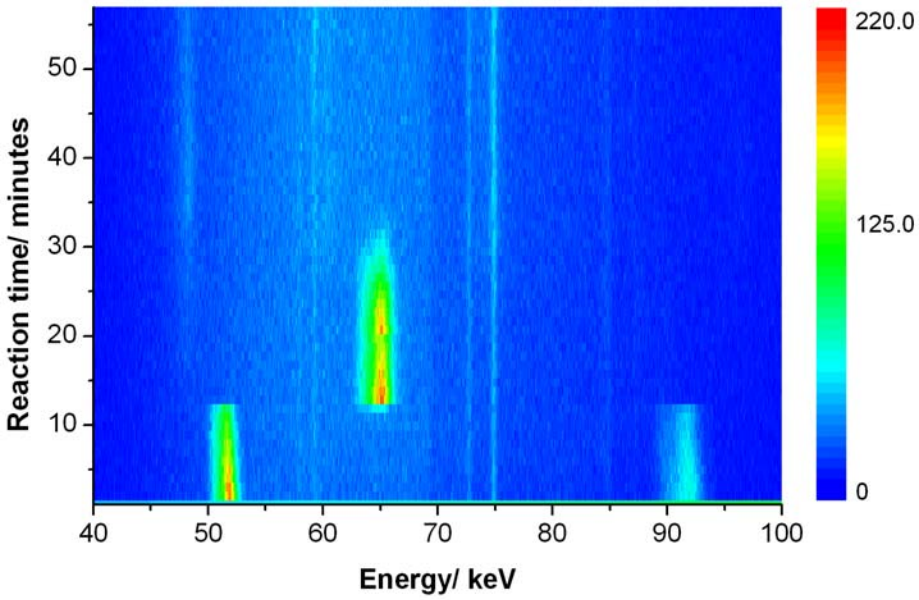


Peak position and peak width for the reaction at 160°C on the edge, where ■ = d spacing (Å) and ▲ = peak width (keV).

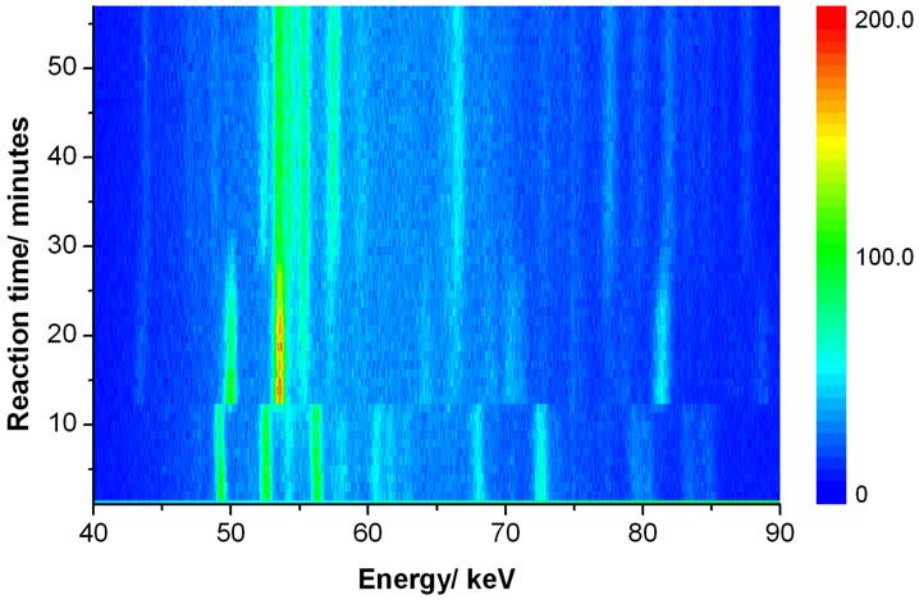


180°C, Edge

Contour plot of 180°C reaction on the edge, bottom detector.



Contour plot of 180°C reaction on the edge, middle detector.



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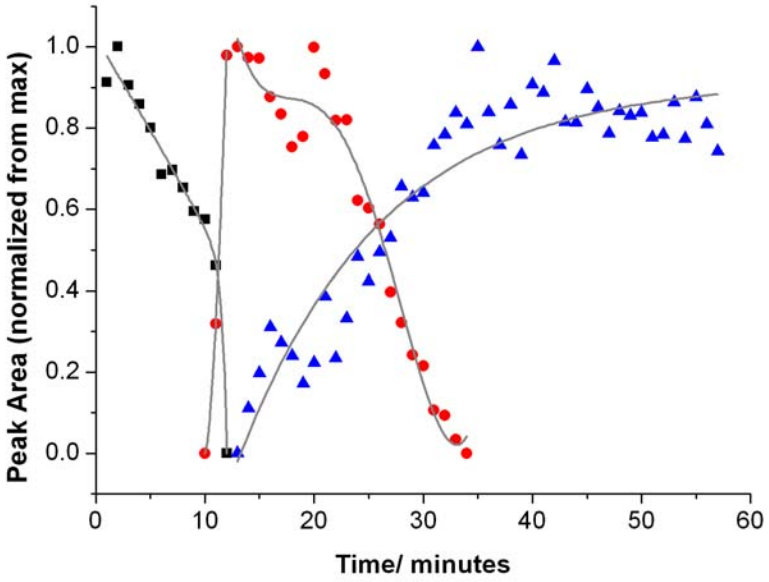
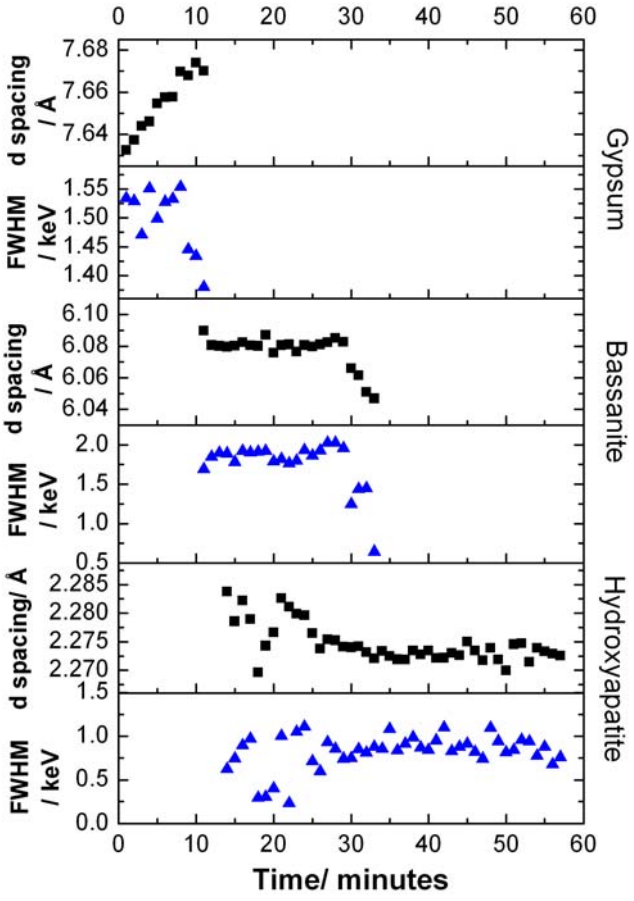
Kinetic plot of phases at 180°C on the edge, where ■ = gypsum, ● = bassanite and ▲ = hydroxyapatite.

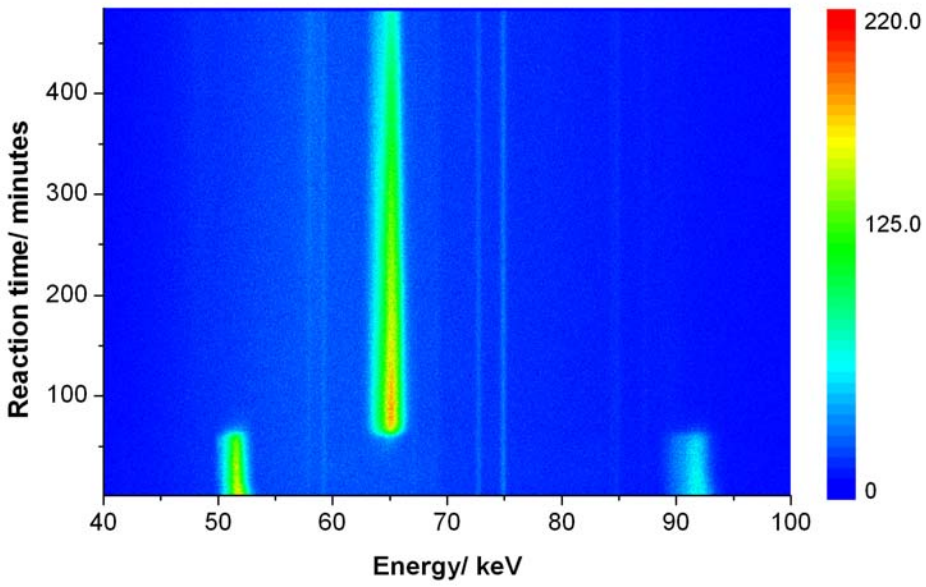


Peak position and peak width for the reaction at 180°C on the edge, where ■ = d spacing (Å) and ▲ = peak width (keV).

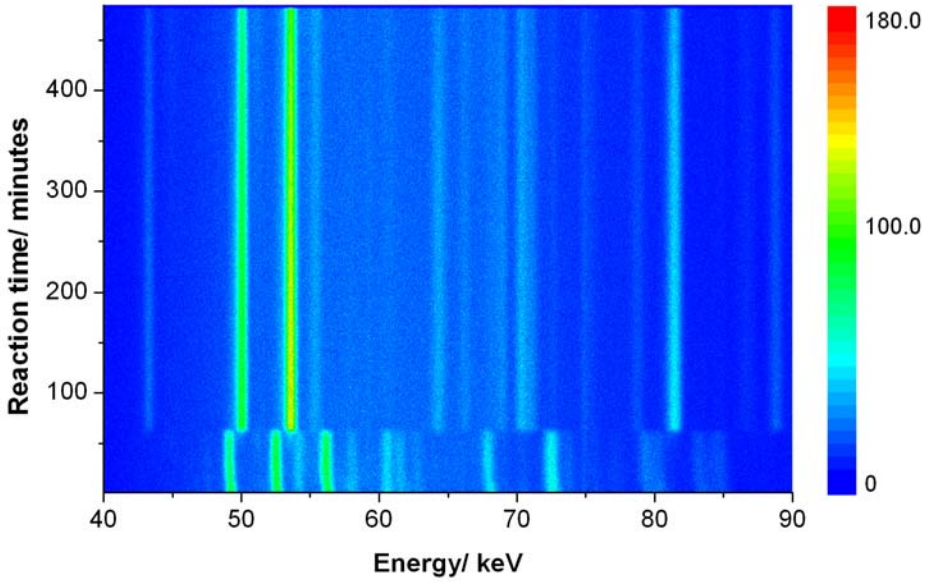


120^{o}C, Core

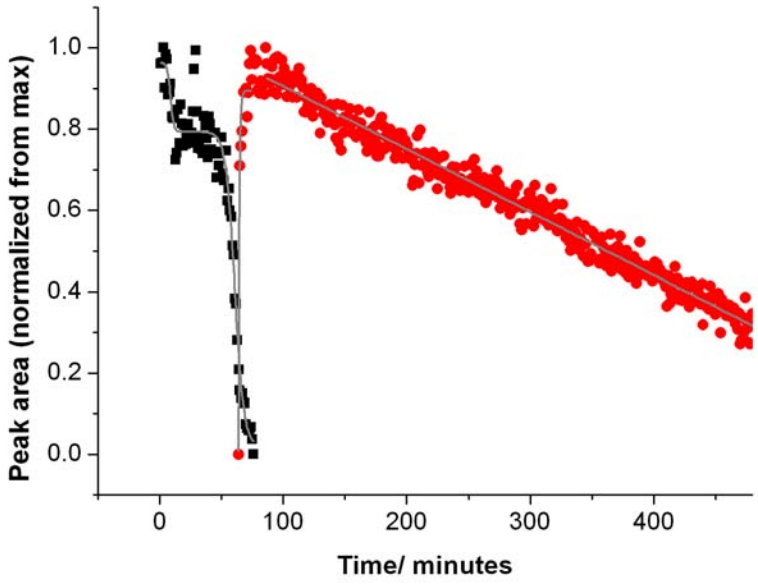
Contour plot of 120^{o}C reaction in the core, bottom detector.



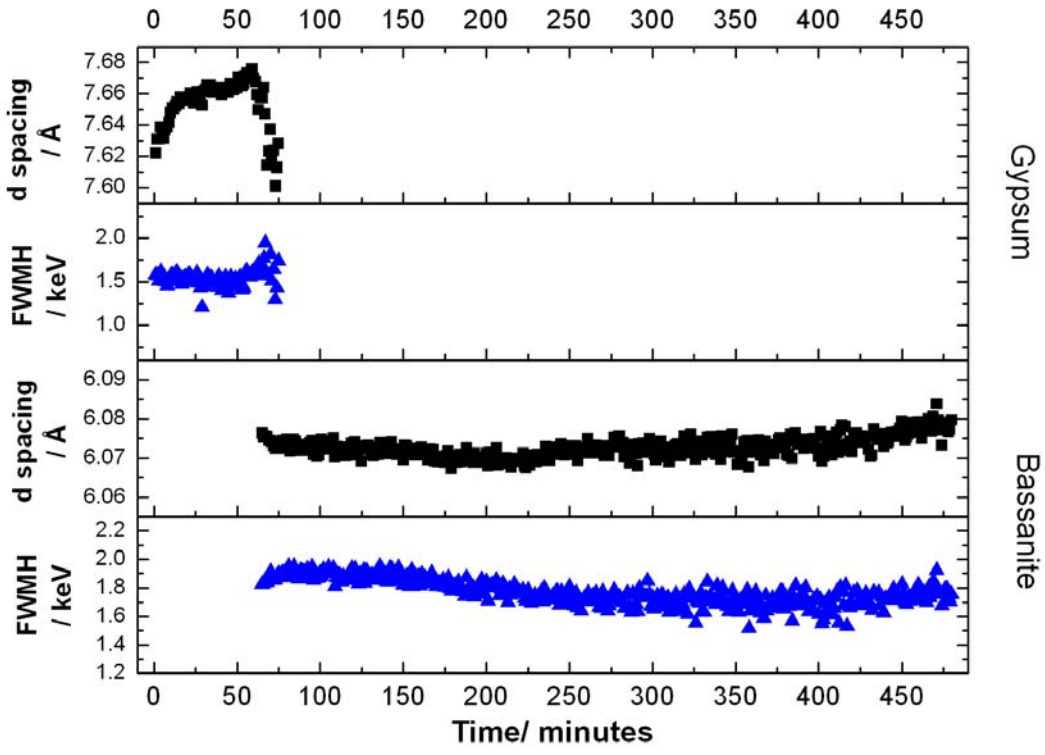
Contour plot of 120^{o}C reaction in the core, middle detector.



Kinetic plot of phases at 120°C in the core, where ■ = gypsum and ● = Bassanite.

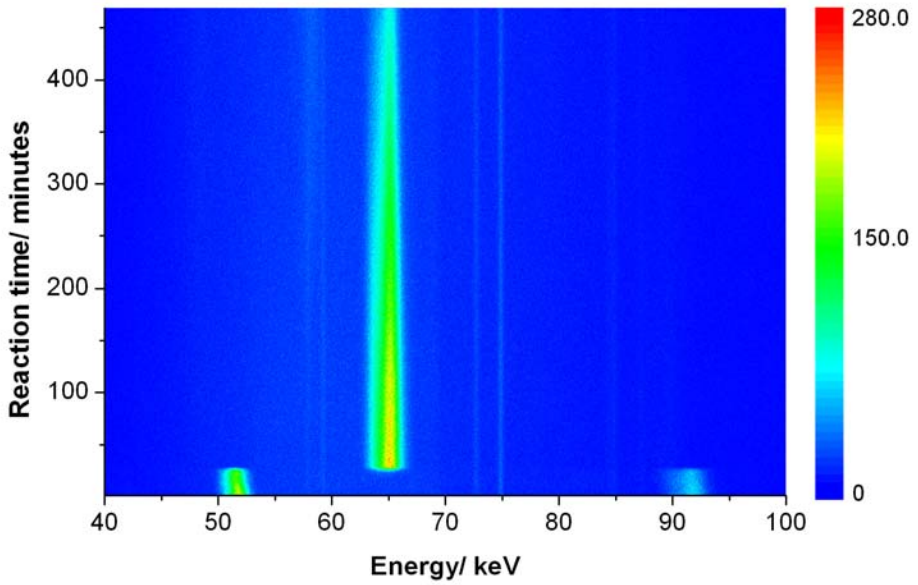


Peak position and peak width for the reaction at 120°C in the core, where ■ = d spacing (Å) and ▲ = peak width (keV).

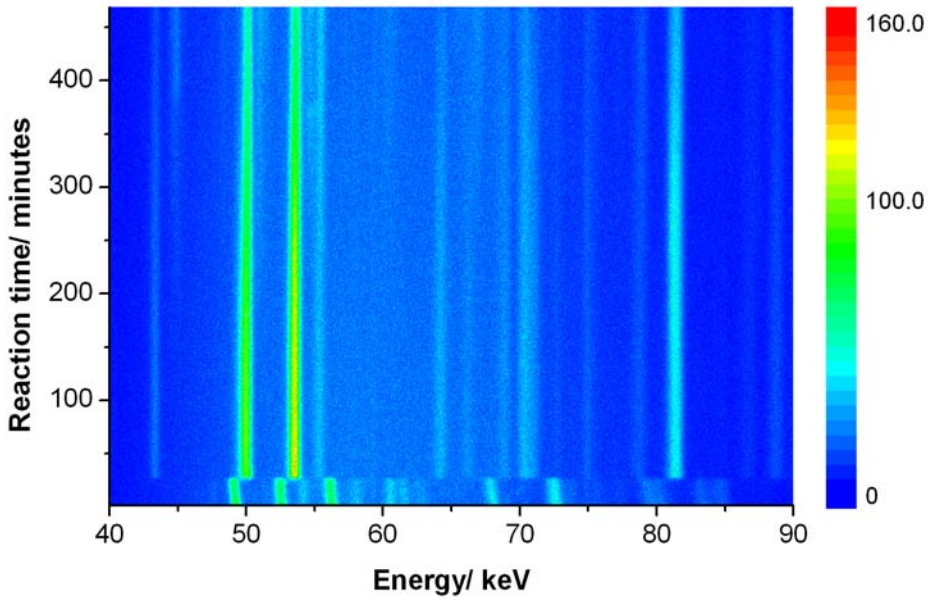


140°C, Core

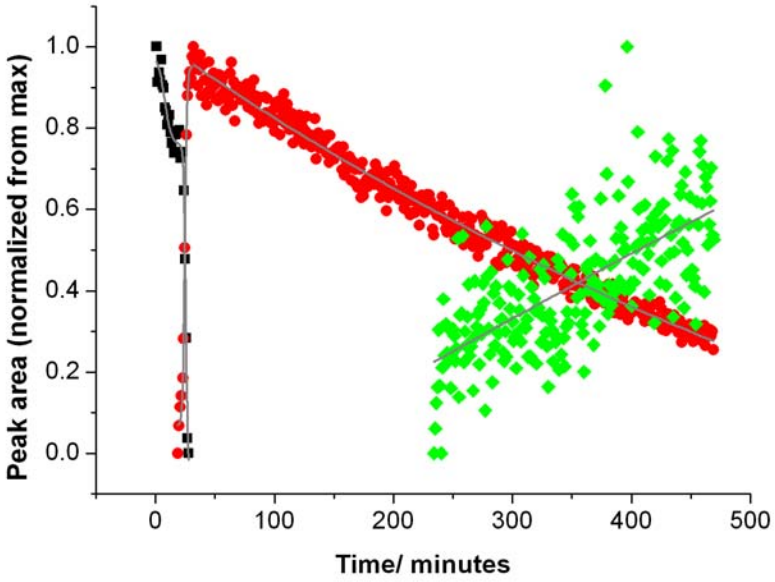
Contour plot of 140°C reaction in the core, bottom detector.



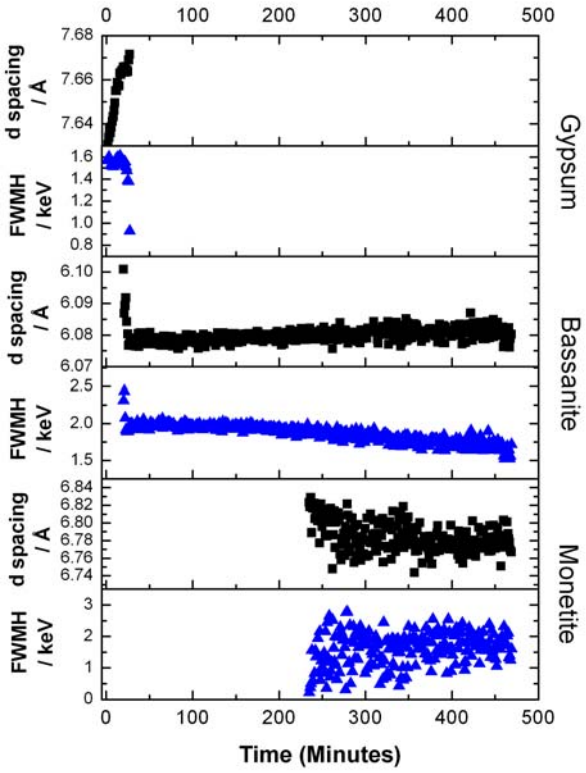
Contour plot of 140°C reaction in the core, middle detector.



Kinetic plot of phases at 140°C in the core, where ■ = gypsum and ● = bassanite and ◆ = monetite.

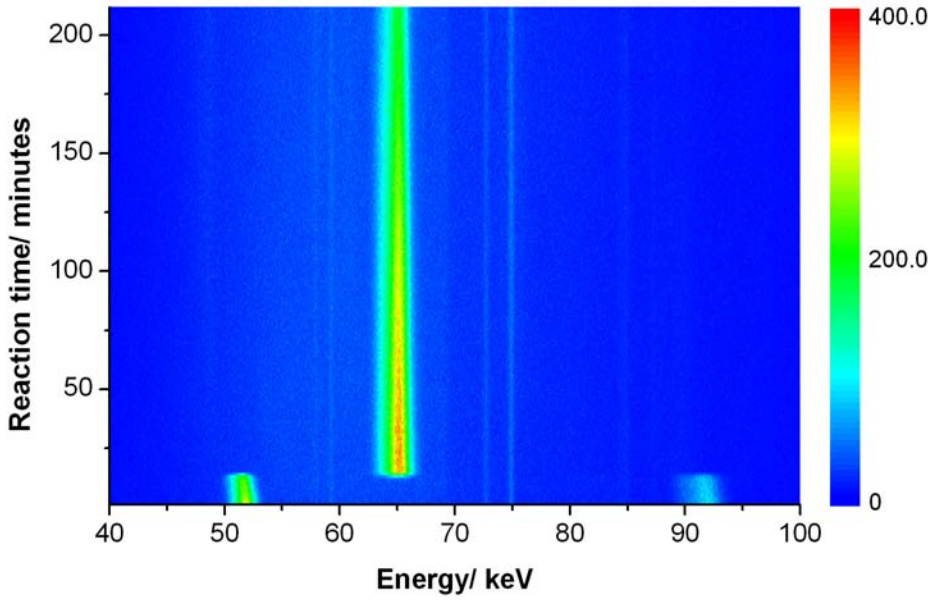


Peak position and peak width for the reaction at 140°C in the core, where ■ = d spacing (Å) and ▲ = peak width (keV).

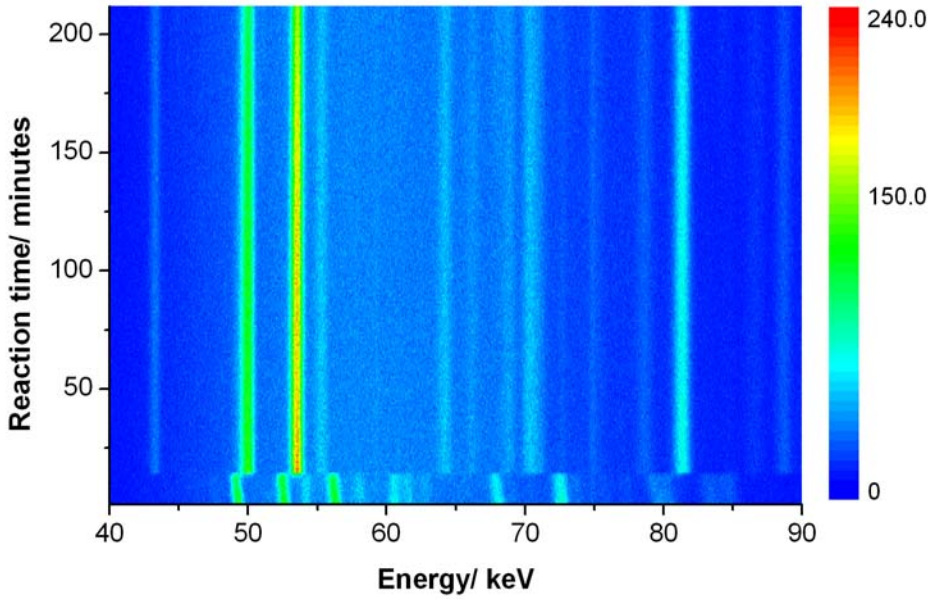


180^{o}C, Core

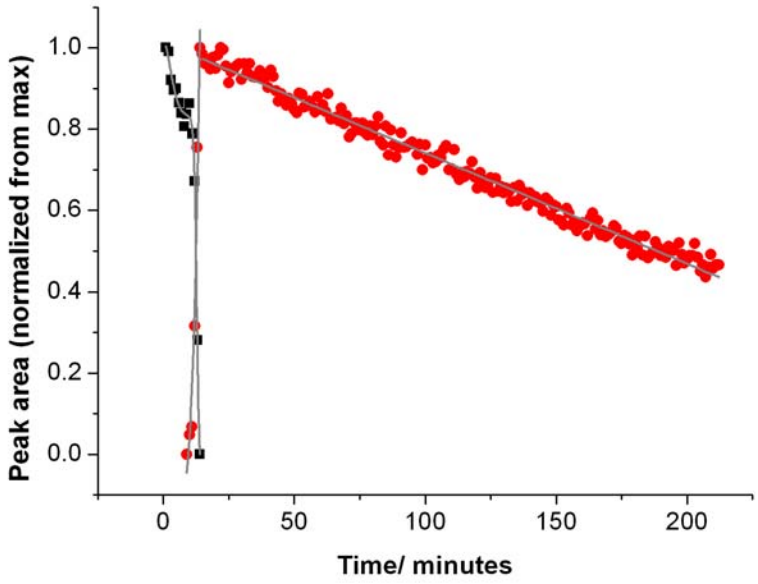
Contour plot of 180^{o}C reaction in the core, bottom detector.



Contour plot of 180^{o}C reaction in the core, middle detector.



Kinetic plot of phases at 180°C in the core, where ■ = gypsum and ● = Bassanite.



Peak position and peak width for the reaction at 180°C in the core, where ■ = d spacing (Å) and ▲ = peak width (keV).