

Description of Additional Supplementary Files

Supplementary Movie 1. X-ray Microscopy Video of sample #1_4a-2 showing the distribution of mineral phases appearing one after another.

Supplementary Movie 2. X-ray Microscopy Video of sample #1_4a-2 showing the distribution of mineral phases appearing one mineral at a time.

Supplementary Movie 3. X-ray Microscopy Video of sample #1_4a-2 regions of interest

1 showing the distribution of mineral phases appearing one after another.

Supplementary Movie 4. X-ray Microscopy Video of sample #1_4a-2 regions of interest

1 showing the distribution of mineral phases appearing one mineral at a time.

Supplementary Movie 5. X-ray Microscopy Video of sample #1_4a-2 regions of interest

2 showing the distribution of mineral phases appearing one after another.

Supplementary Movie 6. X-ray Microscopy Video of sample #1_4a-2 regions of interest 2 showing the distribution of mineral phases appearing one mineral at a time.