Supporting information

Kinetic study on the grain growth of PuO_2 nanocrystals

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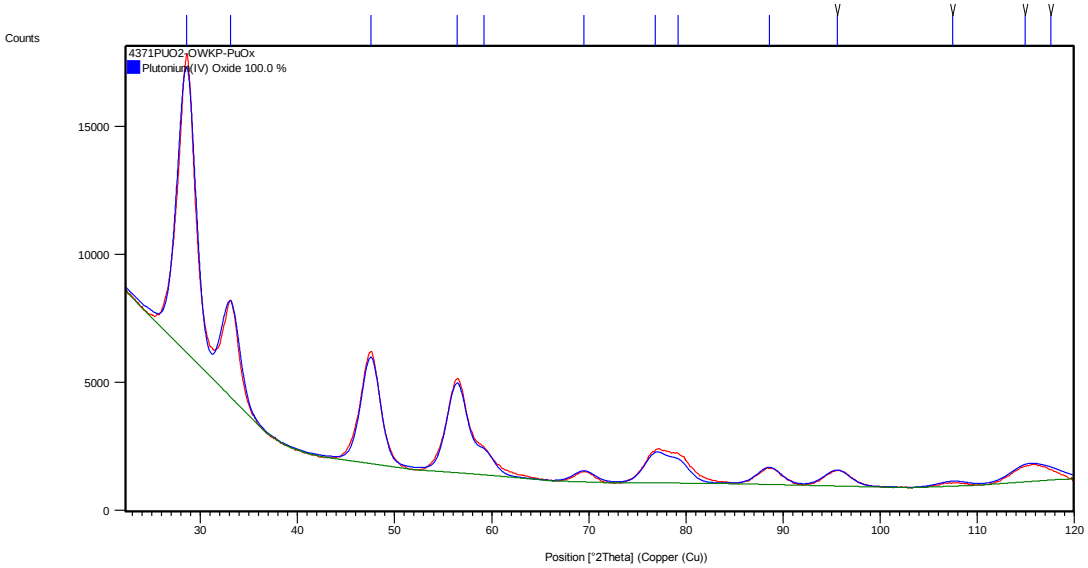
Figure S1) Rietveld analyses of PuO_2 nano particles (HighScore plus [1])

Profile plot: red: measured diffractogram, blue: calculated profile, green: background, Number of variables: 10, Number of constraints: 3, Zero shift/ °2Theta: 0, Specimen displacement/ mm : 0, Profile function: Pseudo Voigt, R (expected)/ %: 1.86, R (profile)/ %: 3.00, R (weighted profile)/ %:3.81. Cell symmetry and parameter: cubic, Fm-3m (no. 225), a = 5.4042(2) Å.



Difference plot (identical x-axis, y-axis scale multiplied by 250, peak position in blue on top):

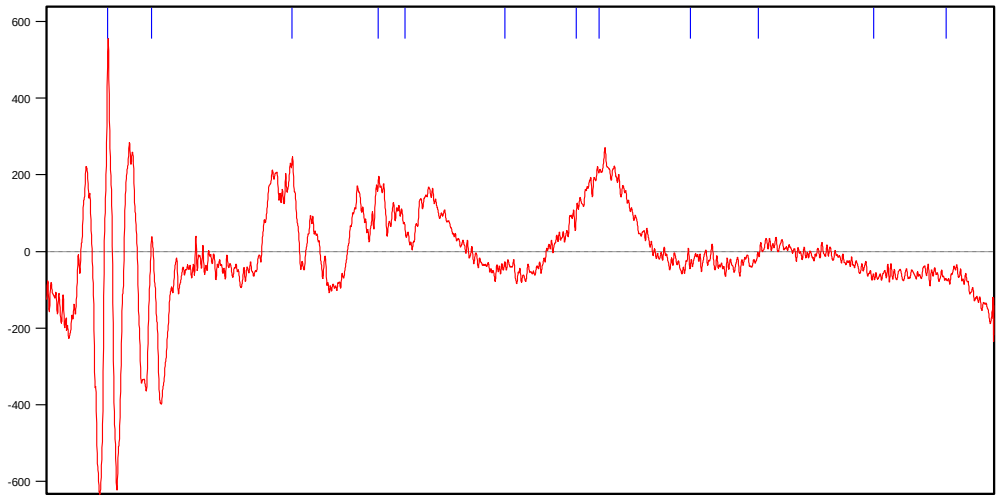
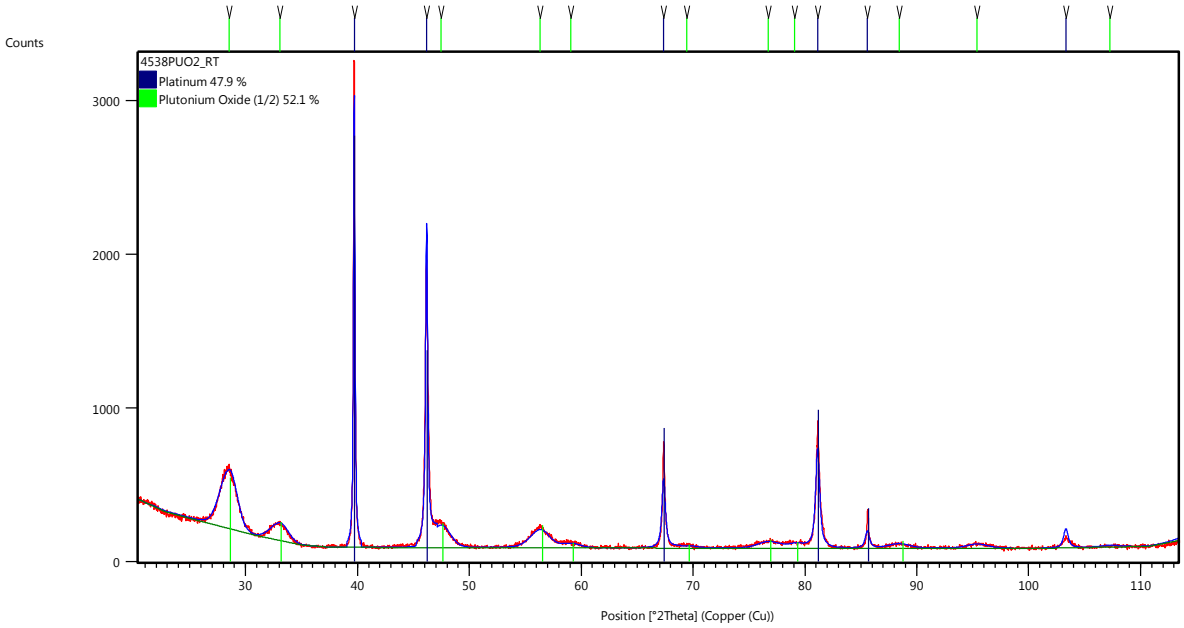


Figure S2) Rietveld analyses of PuO_2 nano particles on Pt HT sample holder

Profile plot: red: measured diffractogram, blue: calculated profile, green: background, Number of variables: 23, Number of constraints: 2, Zero shift/ °2Theta: 0, Specimen displacement/ mm : 0, Profile function: Pseudo Voigt, R (expected)/ %: 8.97, R (profile)/ %: 6.43, R (weighted profile)/ %:8.64. Cell symmetry and parameter: cubic, Fm-3m (no. 225), a= 3.92898(3) for Pt and a = 5.4116(7) Å for PuO_2.



Difference plot (identical x-axis, y-axis scale multiplied by 10, peak position in blue (Pt) and green (PuO_2) on top):

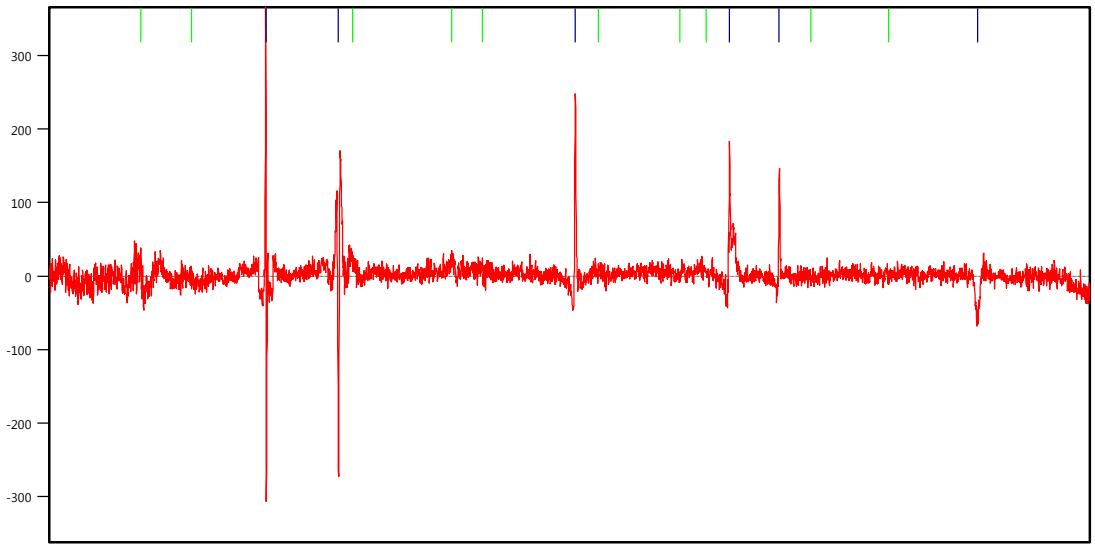


Figure S3) diffractogram of PuO_2 nano particles on Pt HT sample holder at the end of the series of the measurements

Profile plot: red: measured diffractogram, blue: calculated profile, green: background. Presentation only for comparison with Figure S2.

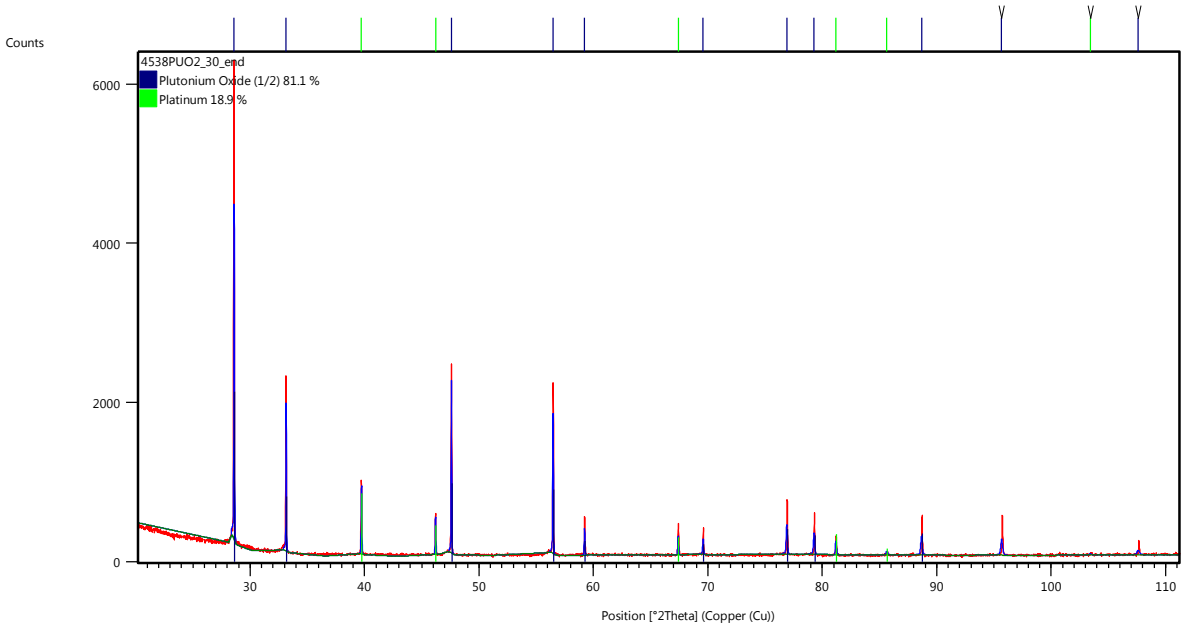


Figure S4: Crystallite growth fitted to the growth model of Eq. 2, exponent n in the range n = 2 to 4. The slope of the linear regression gives the grain growth constant k, reported in **Table 2**.

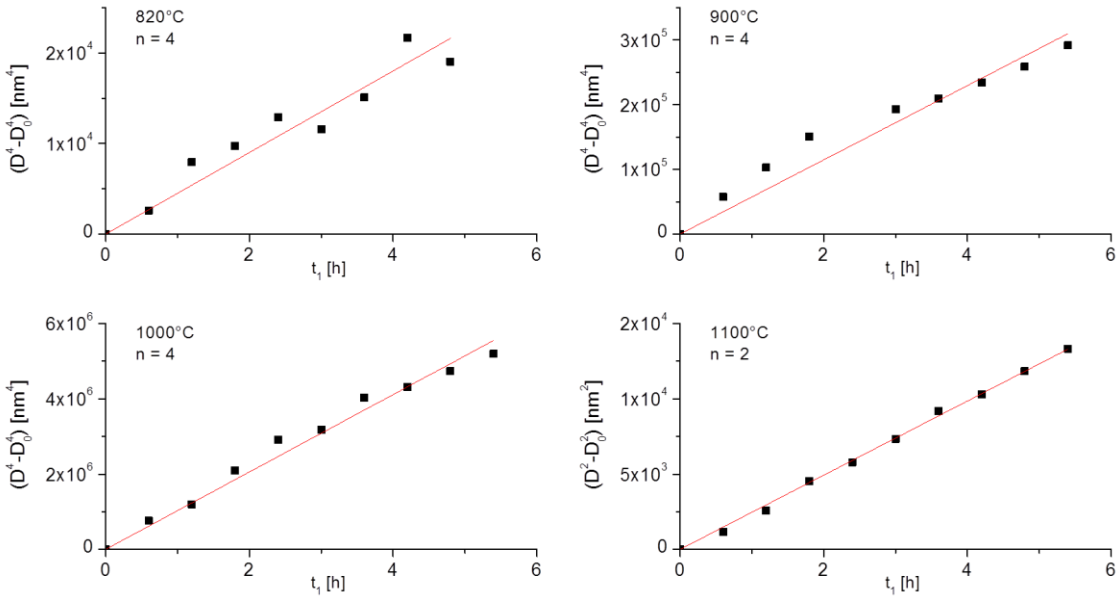
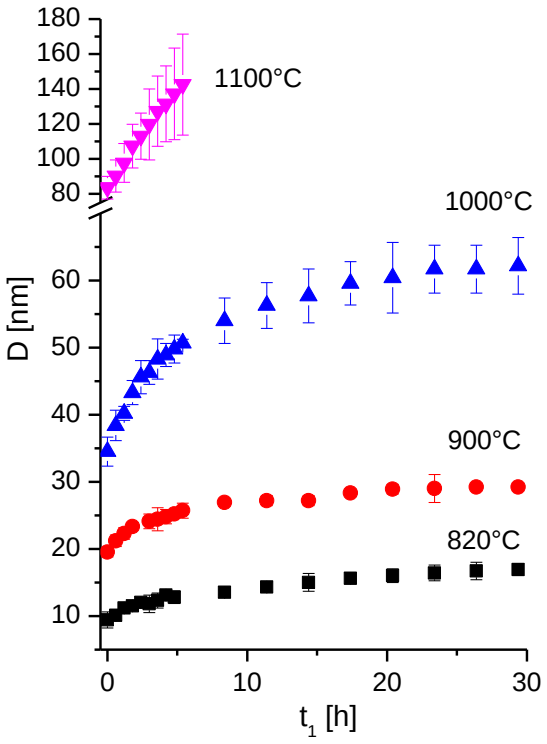


Figure S5: Crystallite size as a function of time at different isothermal temperatures.

The slope of the linear regression gives the grain growth constant k, reported in **Table 2**.



Literature

[1] The HighScore suite, T. Degen, M. Sadki, E. Bron, U. König, G. Nénert; Powder Diffraction / Volume 29 / Supplement S2 / December 2014, pp S13-S18.