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Supporting information for article:

The first- and second-order isothermal phase transitions in Fe3Ga-type compounds

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S1. The main structural data of the phases discussed in the present study

$D0_3$, *Fm*3*m* (N225), $a \approx 5.82$ Å, Fe1, Fe2, and (Fe3/Ga) atoms are partially ordered in (4a), (4b) and (8c) positions, respectively, according to Wyckoff notation; the total number of atoms in the unit cell, N, is equal to 16.

Conditions limiting possible reflections:

General: $h + k, h + l, k + l = 2n$

Fundamental peaks: $h + k + l = 4n$

Superstructure peaks: as general plus no extra conditions

$L1_2$, *Pm*3*m* (N221), $a \approx 3.71$ Å, Ga and Fe atoms are partially ordered in (1a) and (3c) positions; $N = 4$.

Conditions limiting possible reflections:

Fundamental peaks: $h + k, h + l, k + l = 2n$

Superstructure peaks: no conditions

A1, *Fm*3*m* (N225), $a \approx 3.71$ Å, disordered structure, atoms are randomly distributed between (1a) and (1b) positions; $N = 4$.

Conditions limiting possible reflections:

Fundamental peaks: $h + k, h + l, k + l = 2n$

No superstructure peaks

A2, *Im*3*m* (N229), $a \approx 2.91$ Å, disordered structure, atoms are randomly distributed between (2a) positions; $N = 2$.

Conditions limiting possible reflections:

Fundamental peaks: $h + k + l = 2n$

No superstructure peaks

S2. Kinetics of the D03 → L12 transition

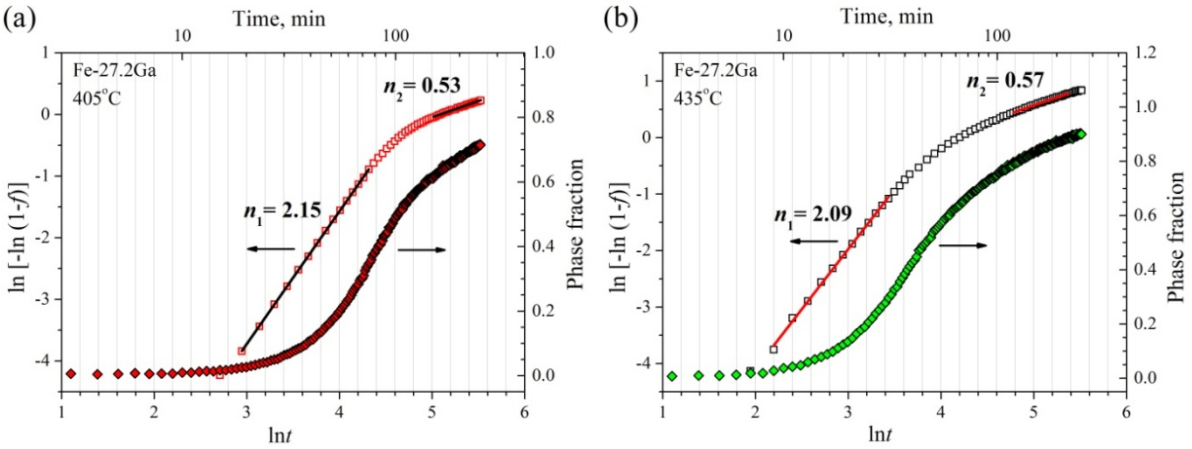

Figure S1 Presentation of the experimental results in the frame of Avrami plot (empty square, left scale) of the $L1_2$ phase volume fraction as a functions of ln$t$ (filled diamond, right scale) for the Fe–27.2Ga samples annealed at (a) 405 °C and (b) 435 °C. Numbers near the curve are local Avrami parameters for two linear ranges. The origin of the time scale corresponds to the beginning of isothermal annealing.

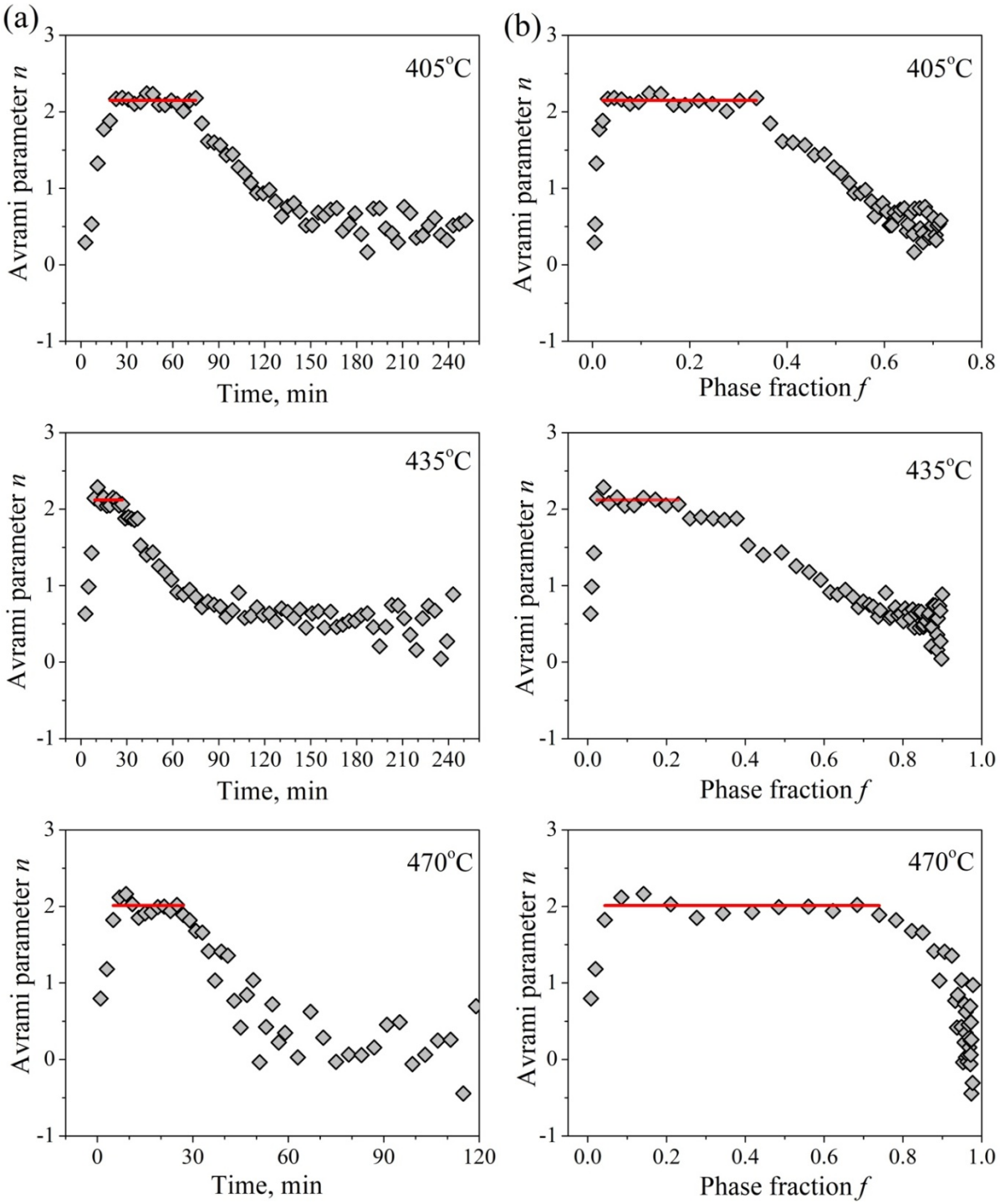

Figure S2 Local Avrami parameters as a function of (a) time and (b) $L1_2$ phase fraction for Fe–27.2Ga alloy.

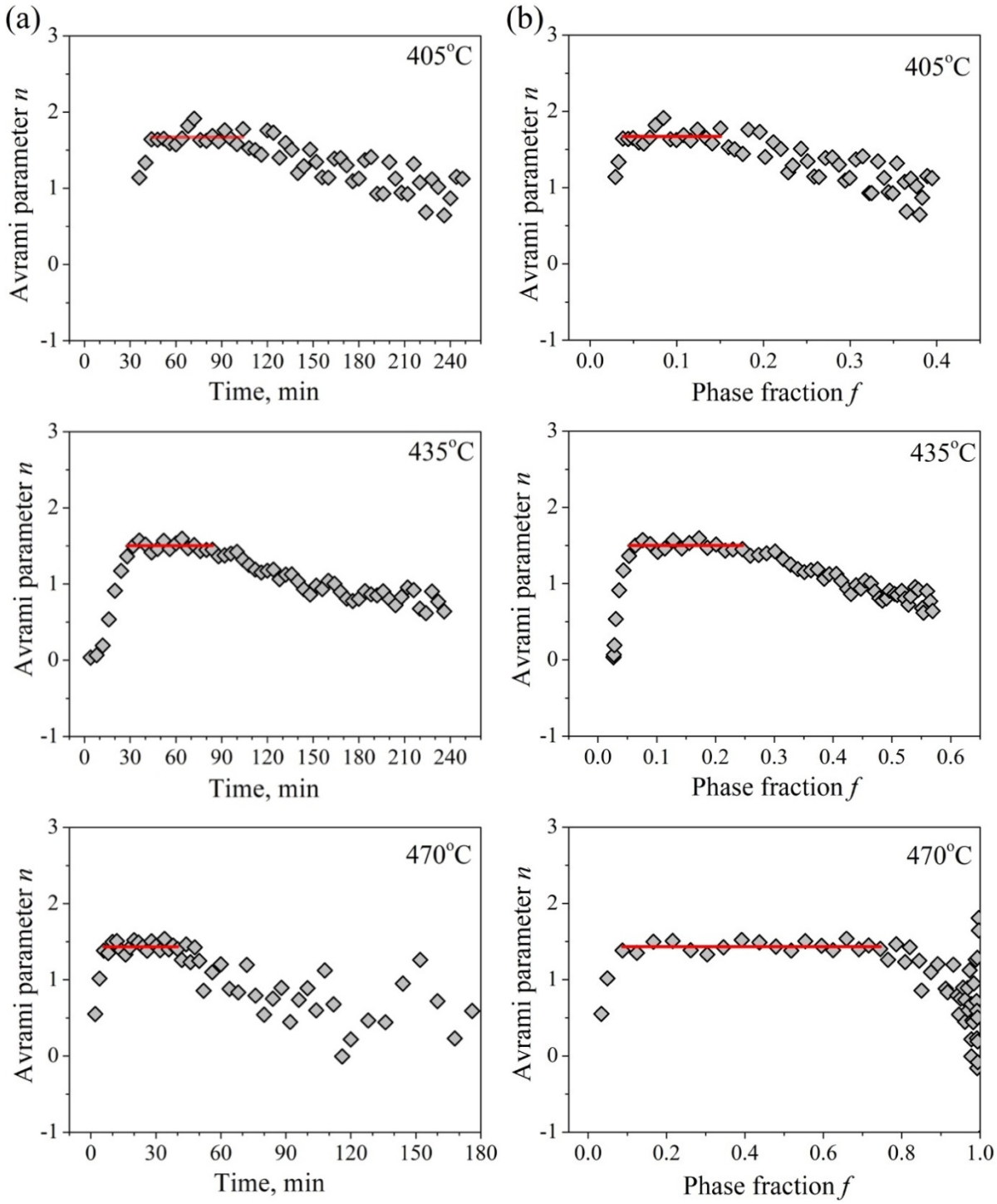

Figure S3 Local Avrami parameters as a function of (a) time and (b) $L1_2$ phase fraction for Fe–28.0Ga alloy.