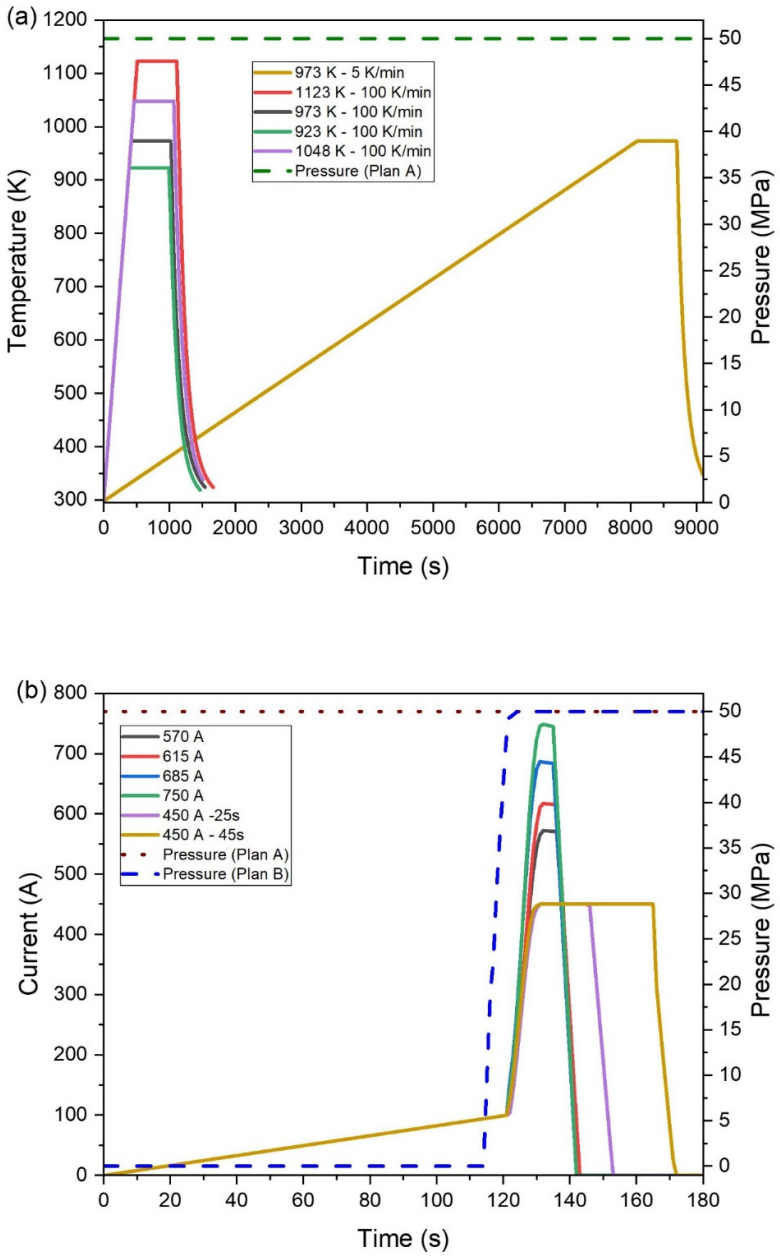

Figure S1. Sintering profiles for different consolidation schemes: (**a**) SPS; (**b**) FSPS Sintering conditions for different consolidation schemes.

Table 1. Sintering conditions for different consolidation schemes.

Mode	Heating rate / applied electrical current	Powder	Dwell time, s	Sintering temperature °C/K	Applied pressure (MPa)	Nomenclature
SPS	100K/min	Initial & MA	600	650/923	Plan A*	SPS_Cu+Cr_923 SPS_Cu/Cr_923
	100K/min	Initial & MA	600	700/973	Plan A	SPS_Cu+Cr_973 SPS_Cu/Cr_973
	100K/min	Initial and MA	600	775/1048	Plan A	SPS_Cu+Cr_1048 SPS_Cu/Cr_1048
	100K/min	Initial & MA	600	850/1123	Plan A	SPS_Cu+Cr_1123 SPS_Cu/Cr_1123
	5K/min	Initial & MA	600	700/973	Plan A	SPS_5_Cu+Cr_973 SPS_5_Cu/Cr_973
FSPS***	450 A	MA	25	550/823	Plan A	FSPS_Cu/Cr_823
		MA	45	770/1043	Plan A	FSPS_Cu/Cr_1043
	570 A	MA	15	400/673	Plan A	FSPS_Cu/Cr_673
	615A	MA	15	425/698	Plan B**	FSPS_Cu/Cr_698
		Initial and MA	15	425/698	Plan A	FSPS_Cu+Cr_698 FSPS_Cu/Cr_698
	685A	MA	15	475/748	Plan B	FSPS_Cu/Cr_748_B
		MA	15	475/748	Plan A	FSPS_Cu/Cr_748_A
	750A	MA	15	545/818	Plan B	FSPS_Cu/Cr_818_B
		MA	15	545/818	Plan A	FSPS_Cu/Cr_818_A

* 50MPa pressure was applied from beginning of experiment until the end of test;
** 0.1MPa minimum pressure was applied until 473 K, then it was rapidly increased to 50 MPa until the end of test;
*** In the case of FSPS experiments the sintering temperature was not predetermined, but was recorded at the end of the heating stage.

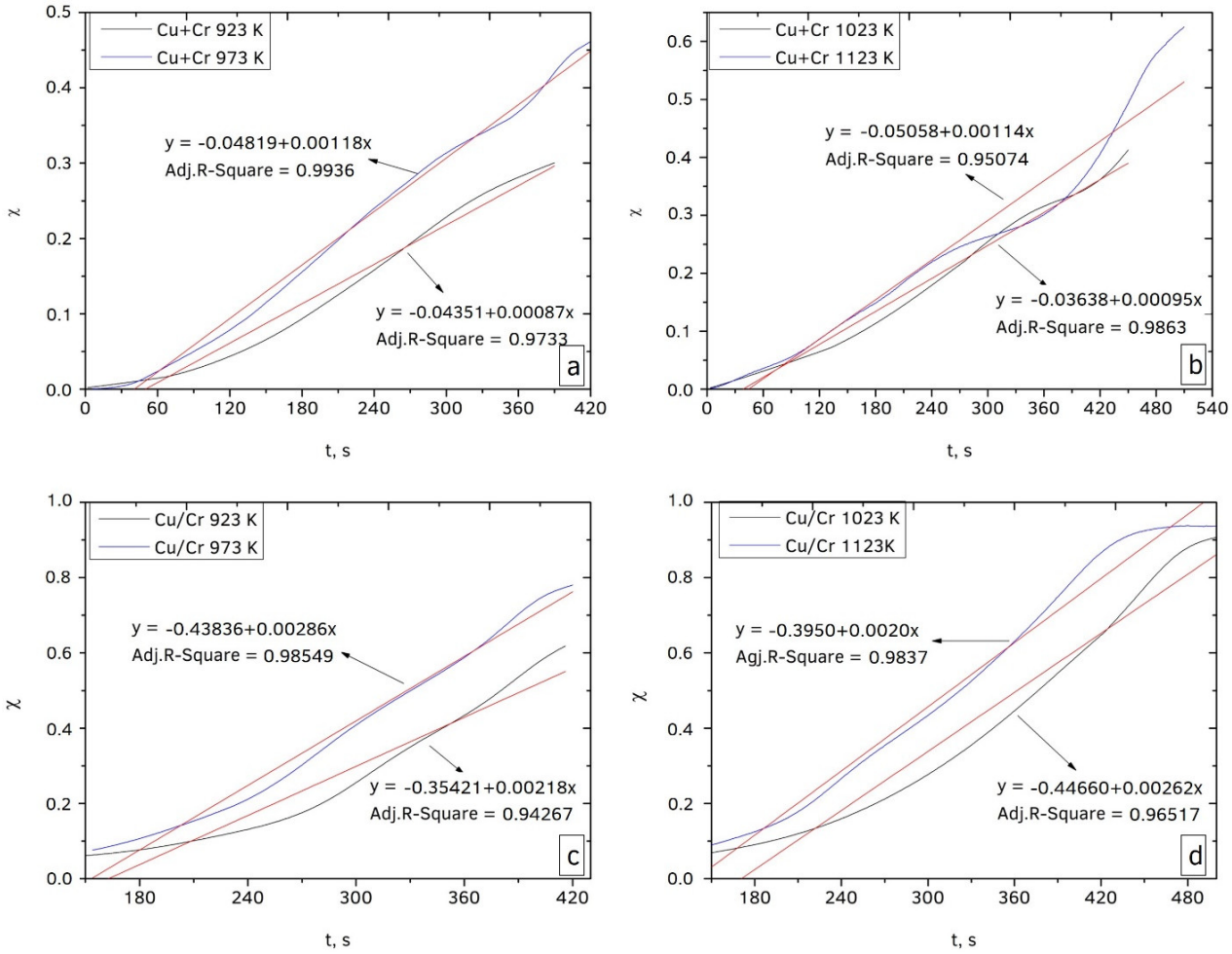

Figure S2. Kinetic curves during the preheating stage for: conventional Cu+Cr mixture **(a, b)**; and Cu/Cr particles **(c, d)** (SPS conditions: heating rate 100 K/min, Plan A).

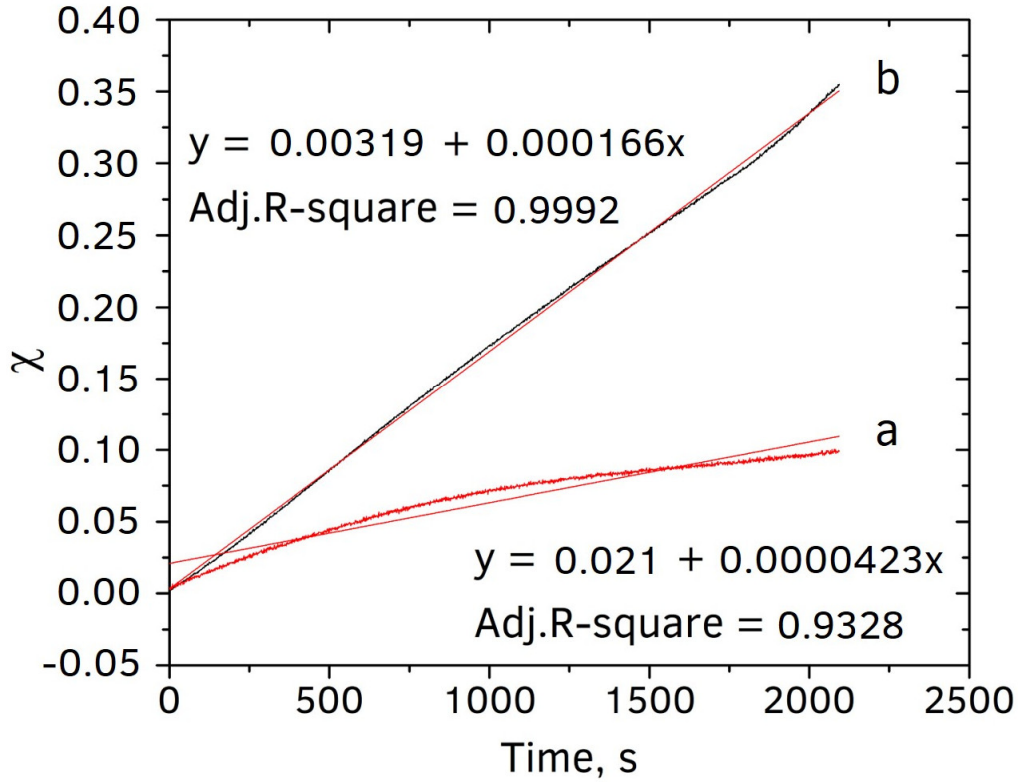

Figure S3. The dependences of relative density vs temperature for: (**a**) conventional Cu+Cr mixture; (**b**) and Cu/Cr particles (SPS conditions: Tmax=973 K; heating rate 5 K/min, Plan A).

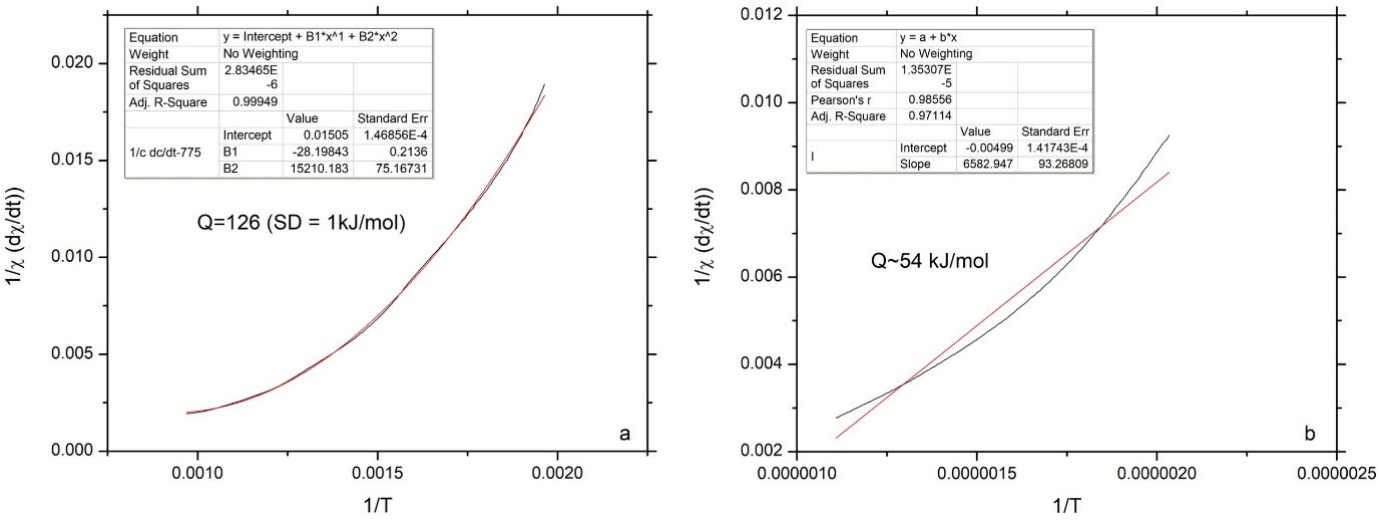

Figure S4. Estimation of the activation energy (Q) of sintering during non-isothermal stage for (a) Cu+Cr mixture and (b) fore Cu/Cr nanostructured particles.

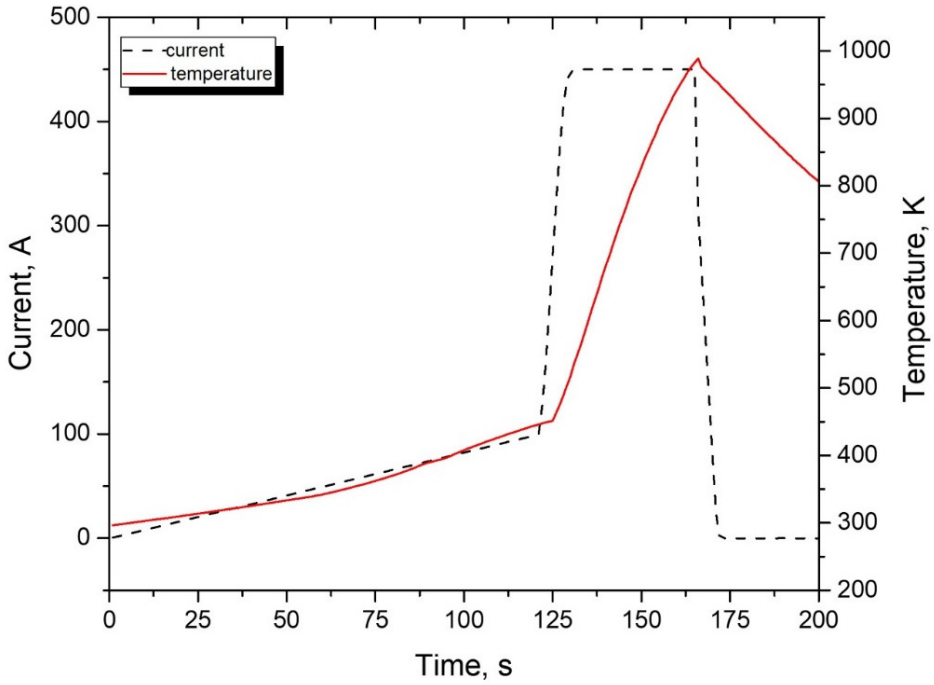

Figure 5. The dependences of current and temperature vs temperature for FSPS.