

Supplementary information

Submicron fibers as morphological improvement of amorphous zirconium oxide particles and their utilization in antimonate (Sb(V)) removal

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Section S1: Chemicals used in the GZR synthesis: ZrCl_4 (Riedel-de Haën, $\geq 98\%$), hydrochloric acid (Sigma-Aldrich, $\geq 37\%$ puriss. p.a.) and ammonia (Sigma-Aldrich, $\sim 25\%$ puriss. p.a.) and those in the FZR synthesis: $\text{ZrOCl}_2 \cdot 8 \text{H}_2\text{O}$ (Sigma-Aldrich, $> 99.5\%$), ethanol (VWR Chemicals, $\geq 99.8\%$) and polyvinylpyrrolidone powder with M_w 1 300 000 (AlfaAesar).

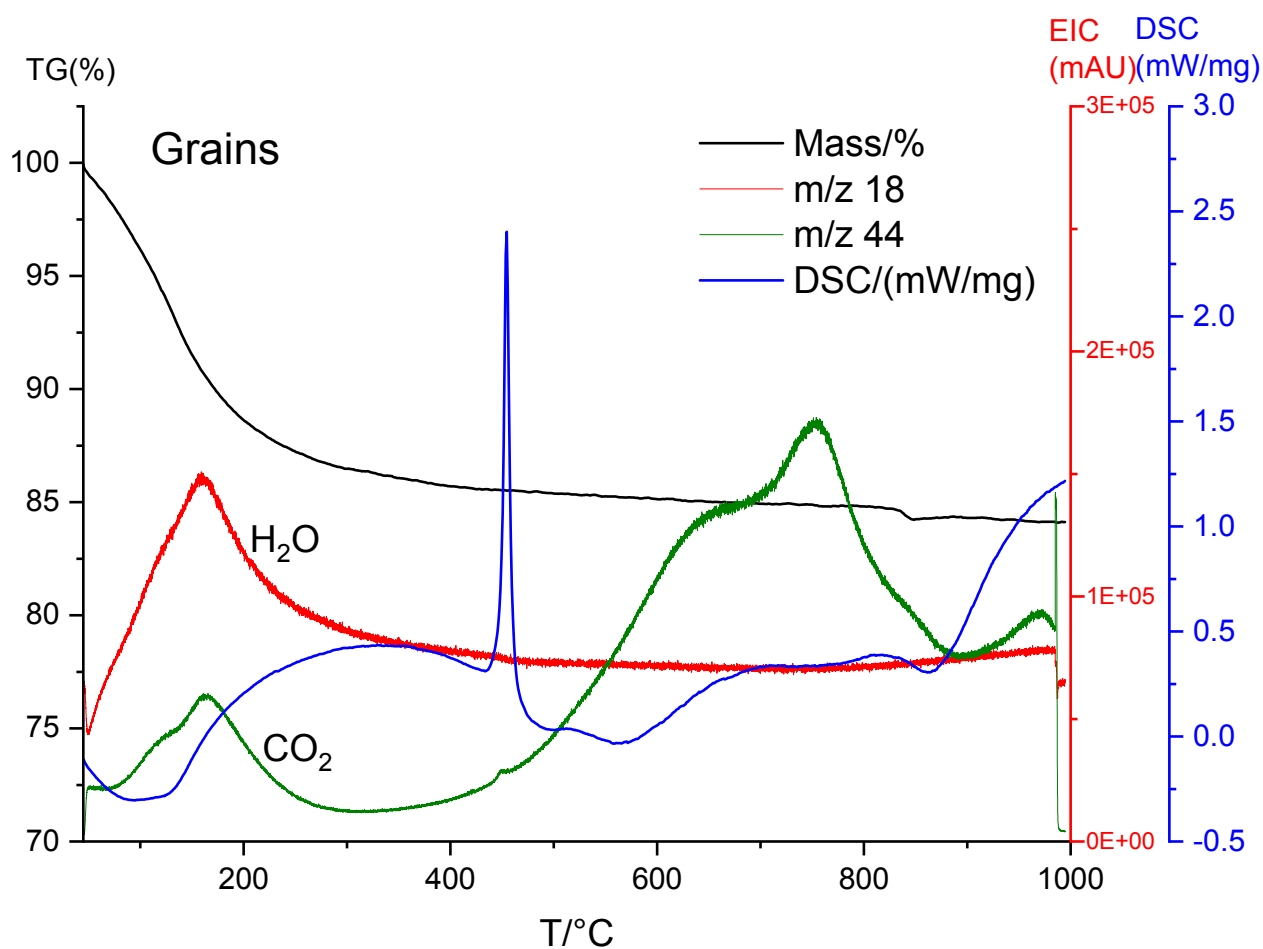


Figure S1: TGA-MS and DSC analysis of GZR.

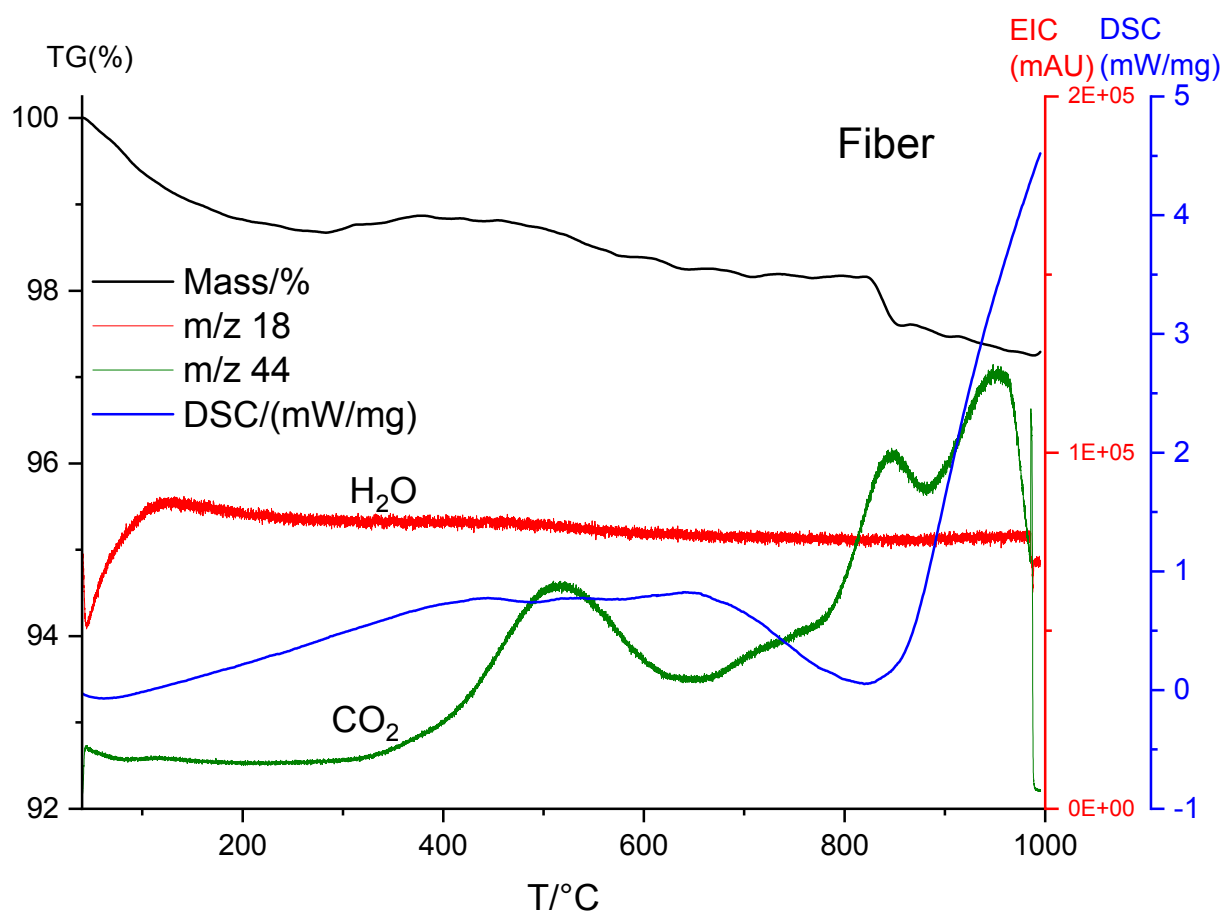


Figure S2: TGA-MS and DSC analysis of FZR.

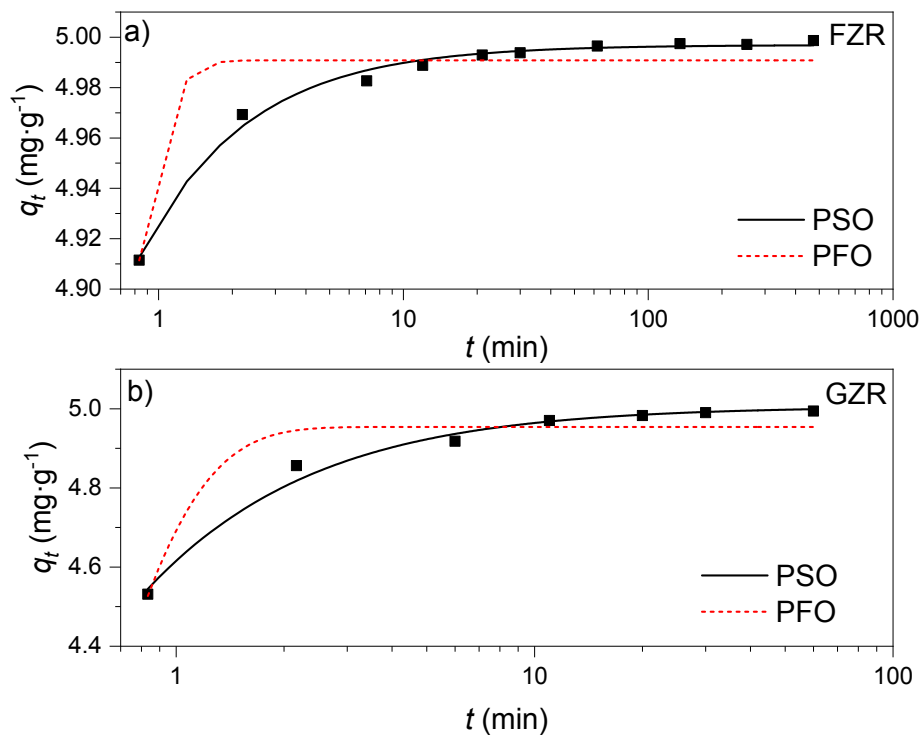


Figure S3: Pseudo-first-order (PFO) and pseudo-second-order (PSO) kinetic fitting of a) FZR and b) GZR.

Table S1. Kinetic parameters of Sb(V) adsorption on zirconium oxide materials based on the pseudo-first-order (PFO) and pseudo-second-order (PSO) rate law fittings.

	Kinetic parameter	GZR	FZR
PFO	k_1 (min ⁻¹)	2.94	4.97
	q_{eq} (mg·g ⁻¹)	4.95	4.99
	R^2	0.920	0.887
PSO	k_2 (g·mg ⁻¹ ·min ⁻¹)	2.36	14.0
	q_{eq} (mg·g ⁻¹)	5.01	5.00
	R^2	0.988	0.992