

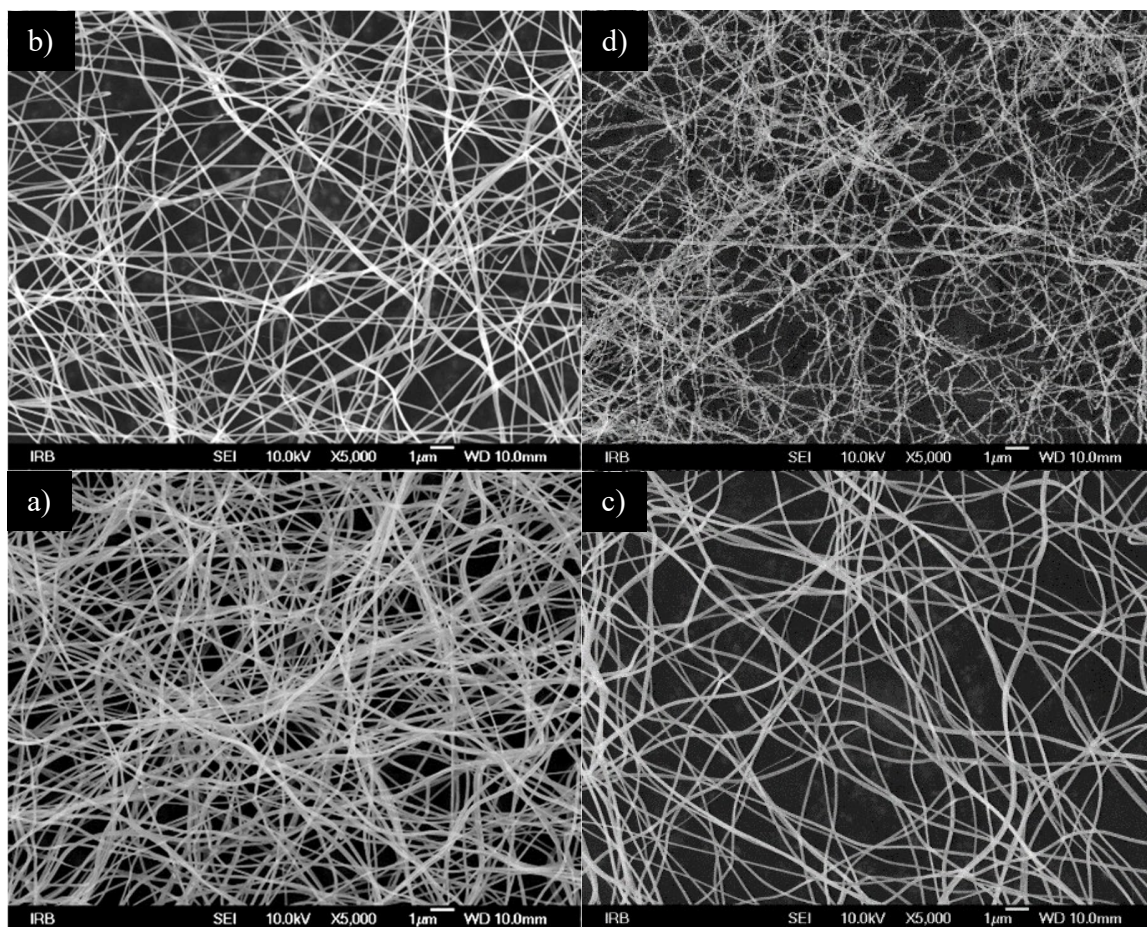


Fig. 1

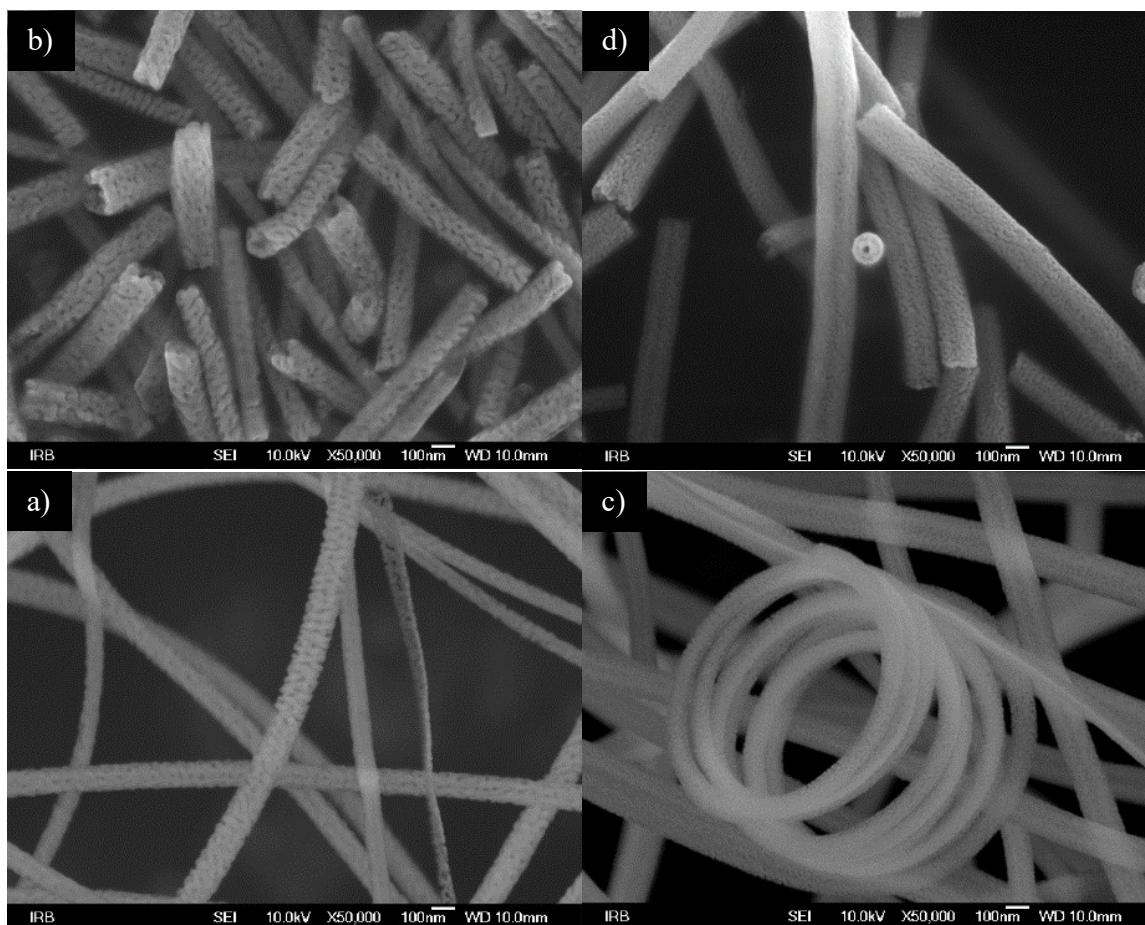


Fig. 2

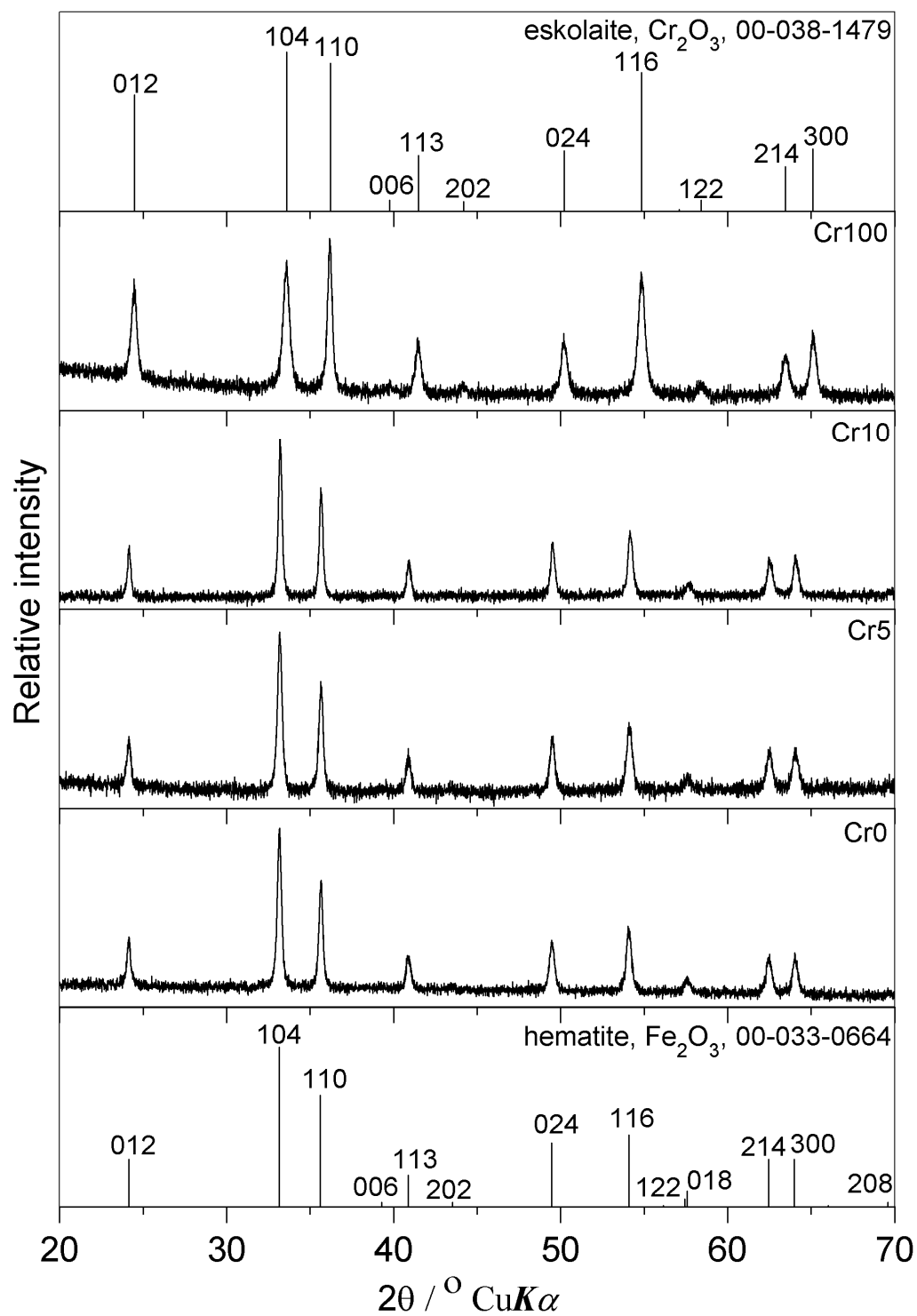


Fig. 3

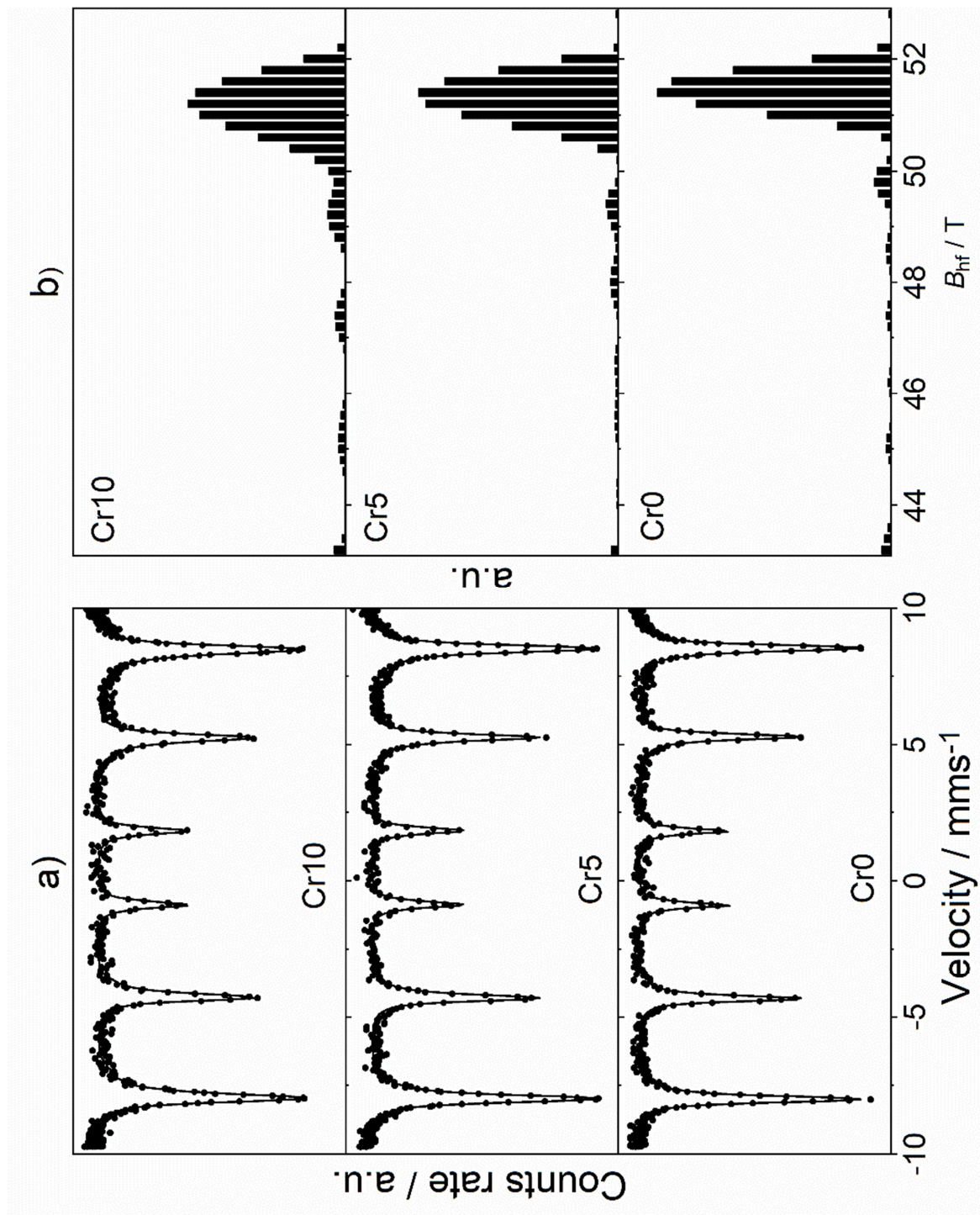


Fig. 4

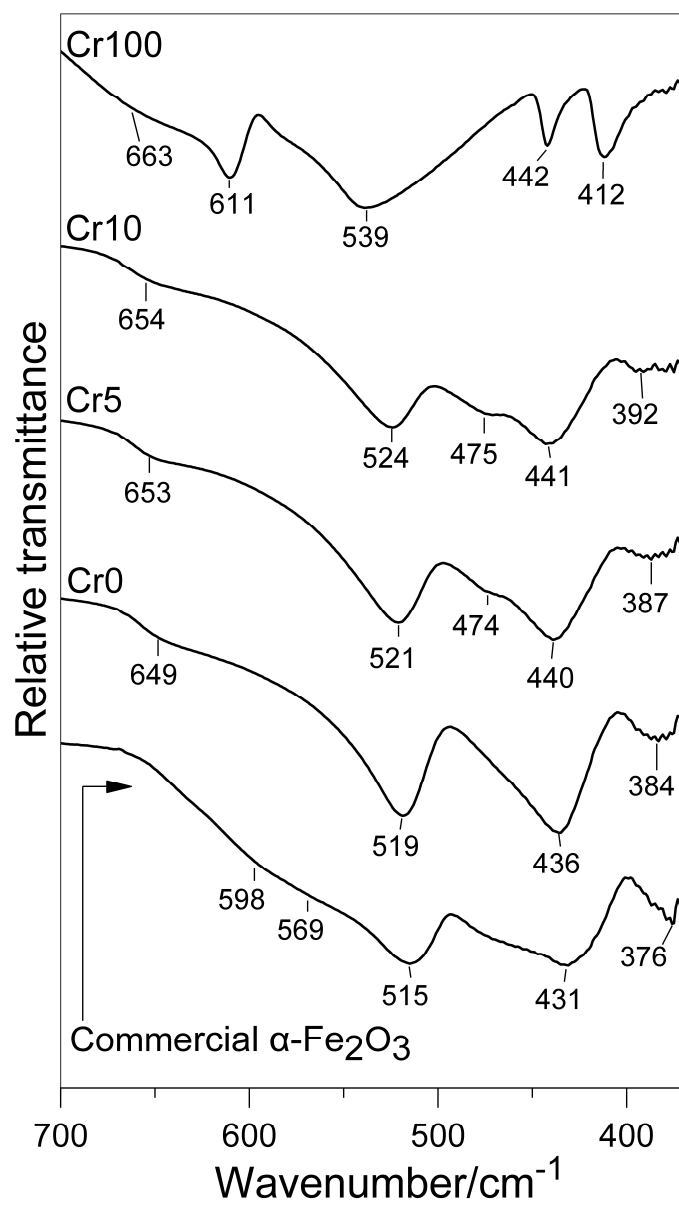


Fig. 5

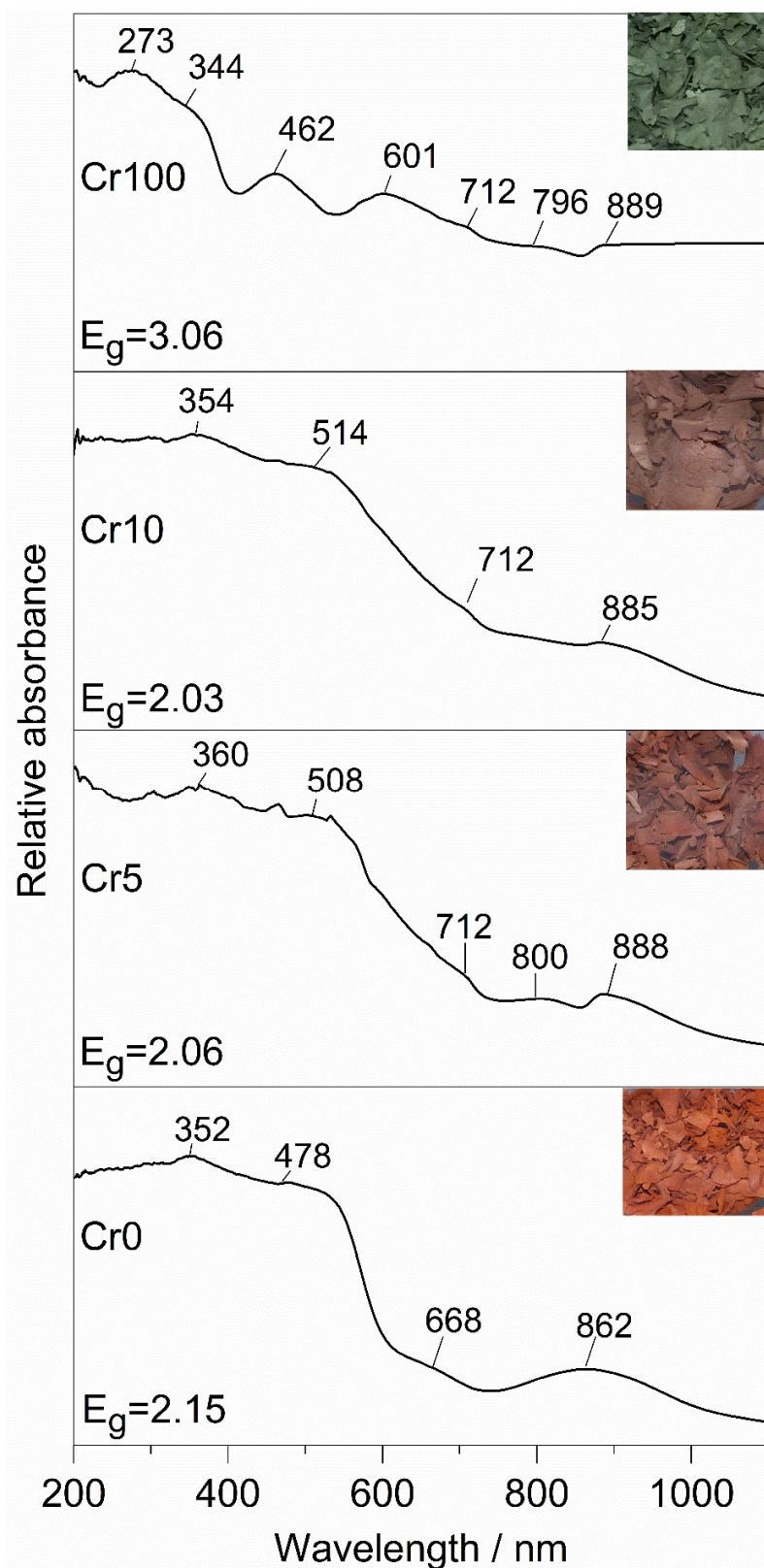


Fig. 6

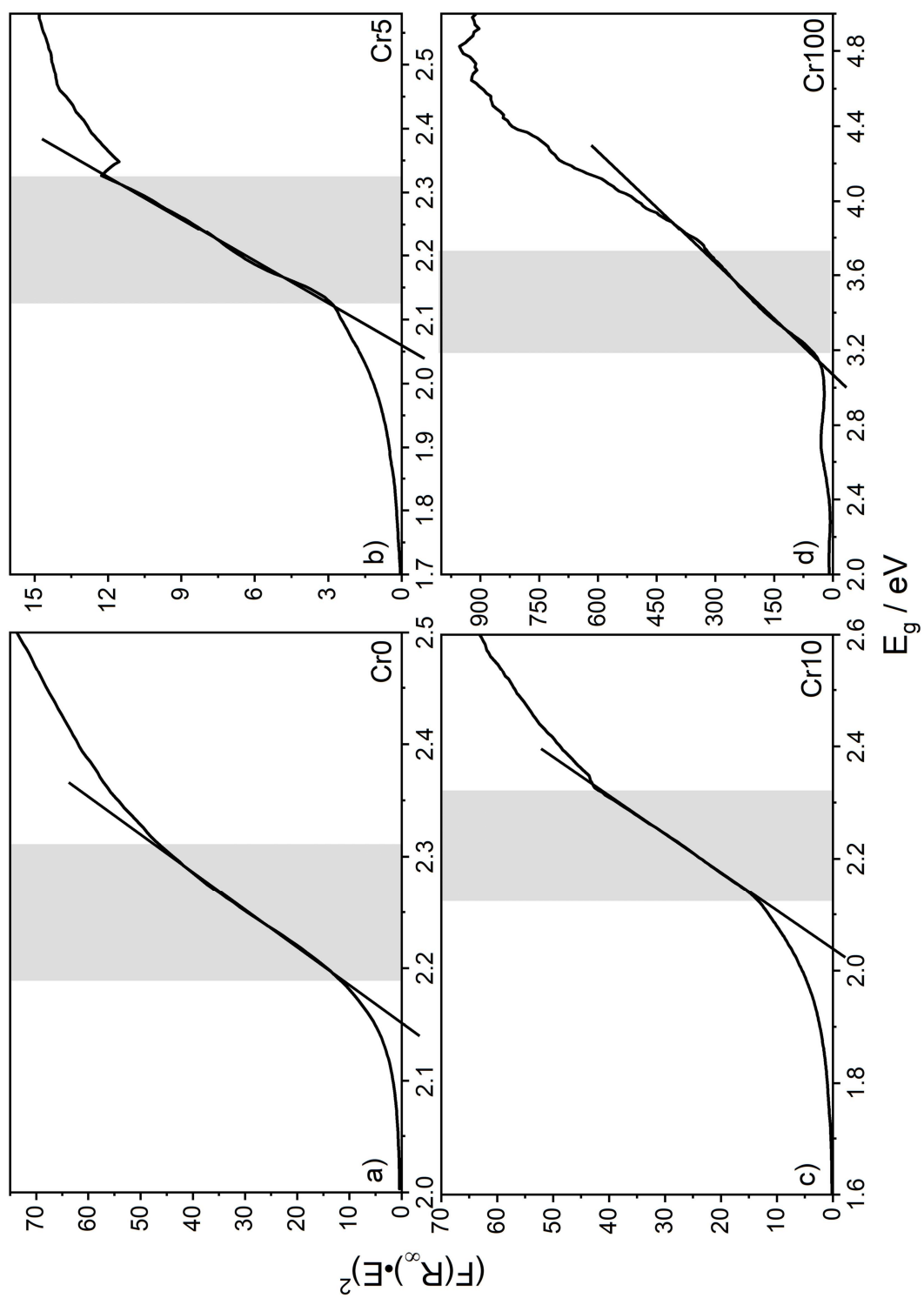


Fig. 7

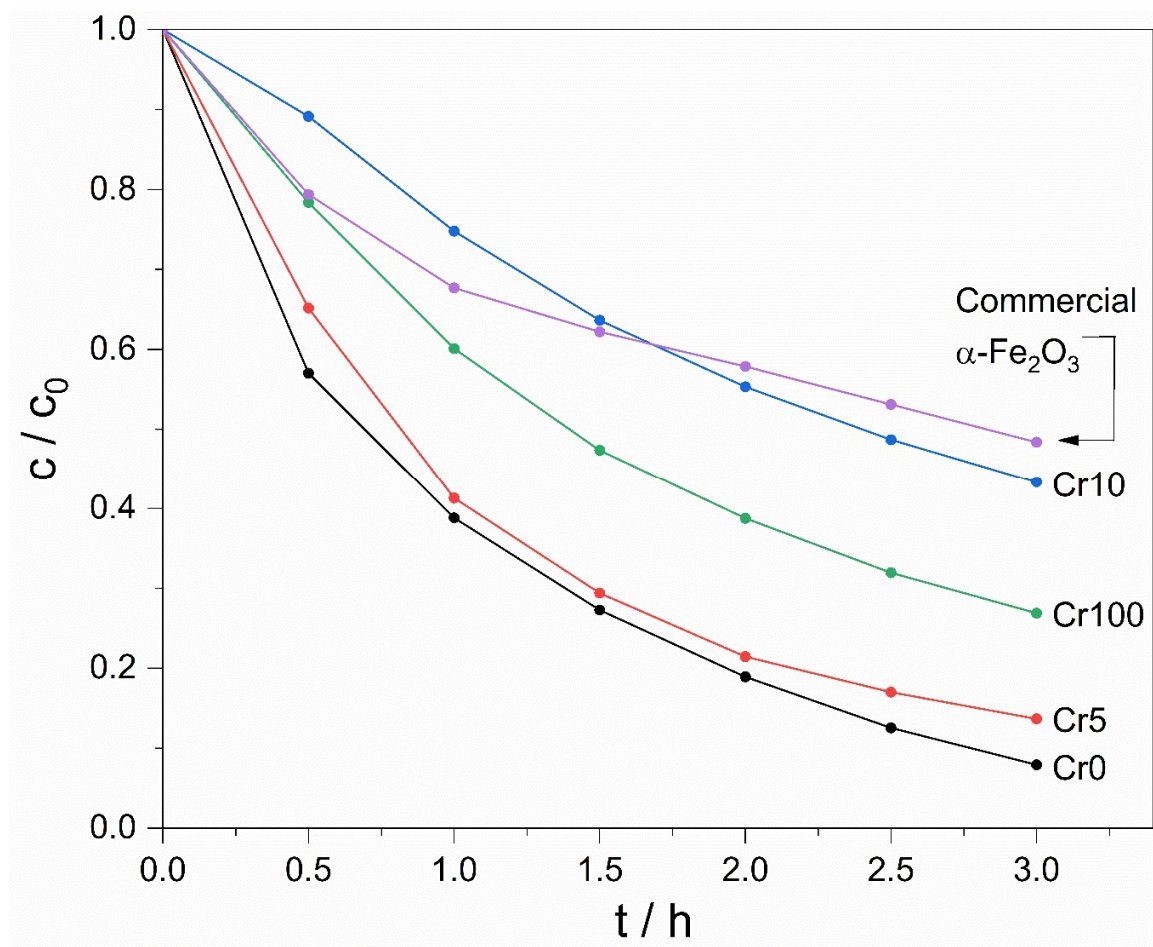


Fig. 8

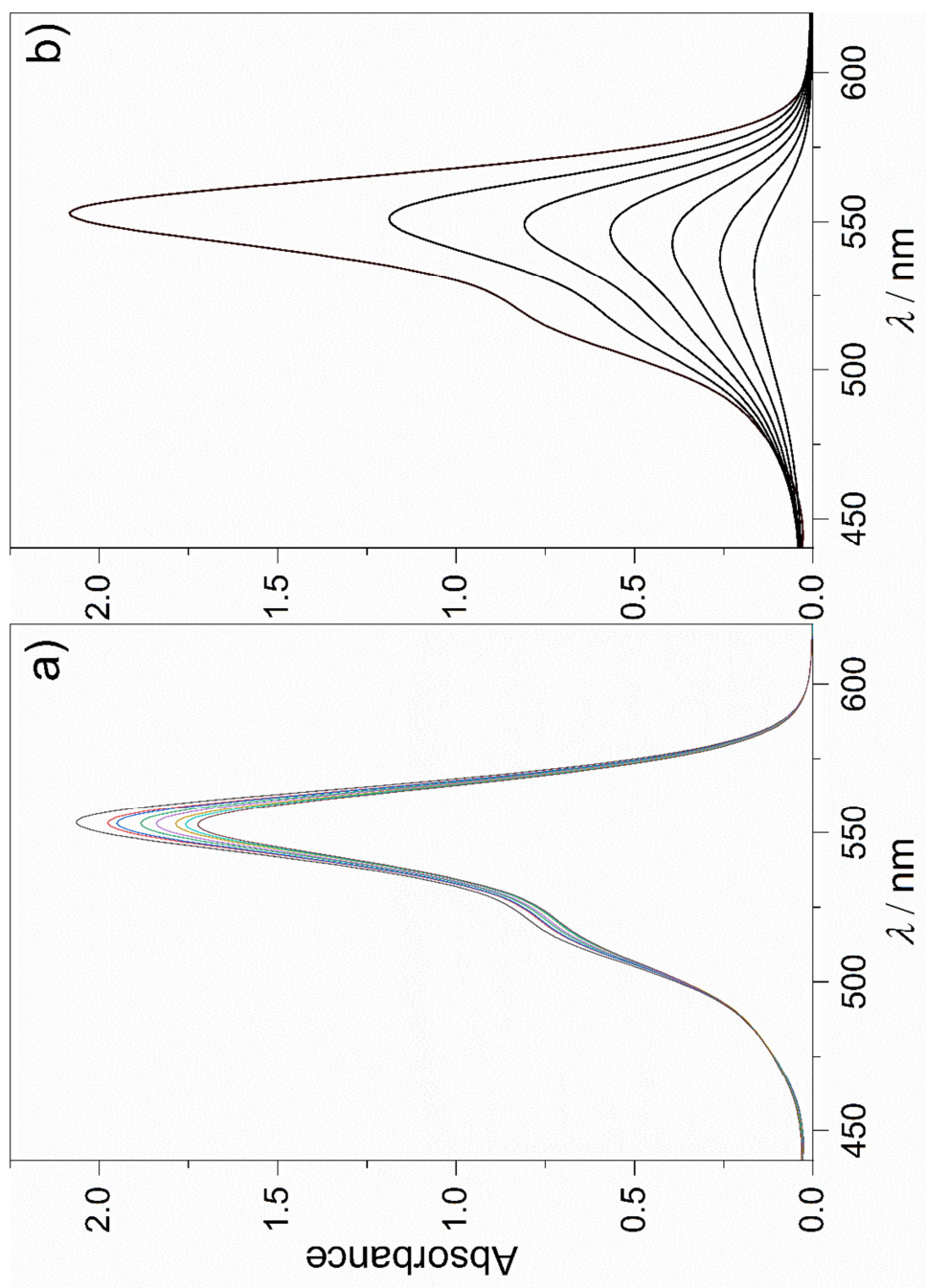


Fig. 9

Table 1

Unit cell parameters of the samples.

Sample	a / Å	c / Å	V / Å ³	Crystallite size* / Å
Cr0	5.0355(8)	13.753(2)	302.02	453
Cr5	5.0355(9)	13.745(3)	301.85	503
Cr10	5.0321(6)	13.729(2)	301.09	613
Cr100	4.9560(6)	13.586(3)	289	327

*Crystallite sizes were estimated by Scherrer equation.

Table 2⁵⁷Fe Mossbauer parameters obtained for samples Cr0, Cr5 and Cr10.

Sample	Line	δ / mm s ⁻¹	Δ or E_q / mm s ⁻¹	B_{hf} / T	Γ / mm s ⁻¹	Area /%
Cr0	M	0.36	-0.20	51.0	0.23	100
Cr5	M	0.37	-0.21	50.9	0.26	100
Cr10	M	0.37	-0.22	50.6	0.27	100

Key: δ =isomeric shift relative to α -Fe at RT, B_{hf} = hyperfine magnetic field, Δ or E_q =quadrupole splitting, Γ =line-width, M=sextet, Q=quadrupole doublet

Errors: δ and E_q or $\Delta = \pm 0.01$ mm s⁻¹, $B_{hf} = \pm 0.2$ T

Remark: Mössbauer spectra were fitted using the distribution of hyperfine magnetic fields.

Table 3

Photocatalytic efficiency of RhB degradation.

Sample	RhB degradation after 3h of illumination	
Commercial α -Fe ₂ O ₃	52%	
Cr0	92%	(17% without illumination)
Cr5	86%	
Cr10	57%	
Cr100	73%	(68% without illumination)