

# Self-Healable Biocomposites Crosslinked with a Combination of Silica and Quercetin

Olga Olejnik <sup>1</sup>, Anna Masek <sup>1,\*</sup> and Małgorzata Iwona Szynkowska-Jóźwik <sup>2</sup>

<sup>1</sup> Institute of Polymer and Dye Technology, Faculty of Chemistry, Lodz University of Technology, Stefanowskiego 12/16, 90-924 Lodz, Poland; olejnik.olga@dokt.p.lodz.pl

<sup>2</sup> Institute of General and Ecological Chemistry, Faculty of Chemistry, Lodz University of Technology, Żeromskiego 116, 90-924 Lodz, Poland; malgorzata.szynkowska@p.lodz.pl

\* Correspondence: anna.masek@p.lodz.pl

**Table S1.** Tensile strength (TS) results of pristine ENR-50-based composites and the same materials after 2 days, 4 days of self-healing without any external stimuli and after 4 days of self-healing with extra 20 minutes of heating.

Sample	TS <sub>pristine</sub> [MPa]	TS <sub>after 2 days of</sub> self-healing [MPa]	TS <sub>after 4 days of</sub> self-healing [MPa]	TS <sub>after 4 days of</sub> self-healing and 20 min of heating [MPa]
ENR	0.262 ± 0.014	0.21 ± 0.02	0.208 ± 0.014	-
ENR/quercetin22	0.61 ± 0.14	0.35 ± 0.07	0.38 ± 0.02	0.31 ± 0.08
ENR/quercetin4	1.04 ± 0.10	0.33 ± 0.08	0.36 ± 0.09	0.6 ± 0.5
ENR/silica15	2.3 ± 0.2	0.38 ± 0.04	0.52 ± 0.07	0.295 ± 0.012
ENR/quercetin2/silica15	3.3 ± 0.2	1.5 ± 0.6	1.3 ± 0.6	1.4 ± 0.3
ENR/quercetin4/silica15	3.8 ± 0.5	1.1 ± 0.5	1.4 ± 0.3	1.3 ± 0.5
ENR/DCP2	4.6 ± 0.2	0.4 ± 0.2	0.37 ± 0.03	0.6 ± 0.2

**Table S2.** Elongation at break (Eb) results of pristine ENR-50-based composites and the same materials after 2 days, 4 days of self-healing without any external stimuli and after 4 days of self-healing with extra 20 minutes of heating.

Sample	Eb <sub>pristine</sub> [%]	Eb <sub>after 2 days of</sub> self-healing [%]	Eb <sub>after 4 days of</sub> self-healing [%]	Eb <sub>after 4 days of</sub> self-healing and 20 min of heating [%]
ENR	1170 ± 90	80 ± 20	90 ± 30	-
ENR/quercetin22	800 ± 150	300 ± 200	370 ± 90	240 ± 150
ENR/quercetin4	770 ± 50	90 ± 60	130 ± 70	300 ± 300
ENR/silica15	910 ± 80	40 ± 20	150 ± 70	70 ± 60
ENR/quercetin2/silica15	620 ± 30	280 ± 140	250 ± 120	250 ± 90
ENR/quercetin4/silica15	510 ± 60	164 ± 104	200 ± 50	160 ± 80
ENR/DCP2	830 ± 20	50 ± 20	48 ± 8	140 ± 70