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Article

On the use of mechano-chemically modified ground tire rubber (GTR) as recycled and sustainable filler in styrene-butadiene rubber (SBR) composites

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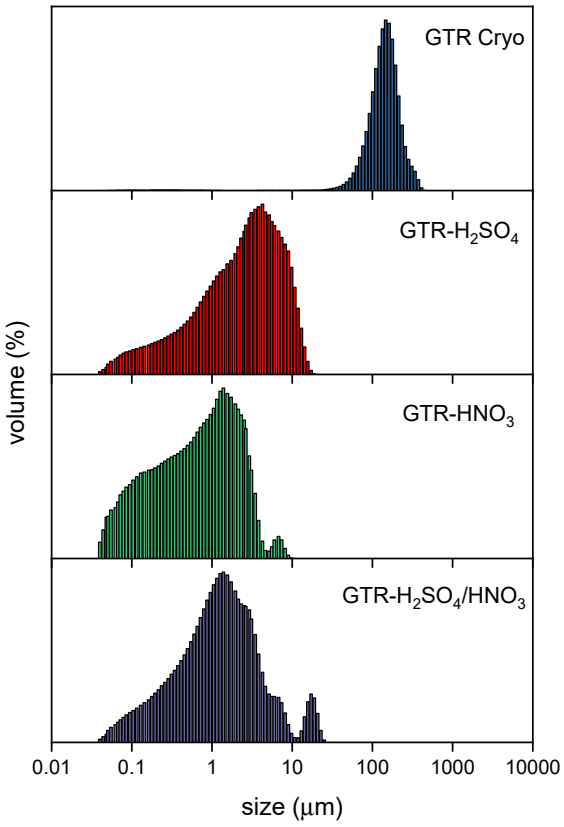
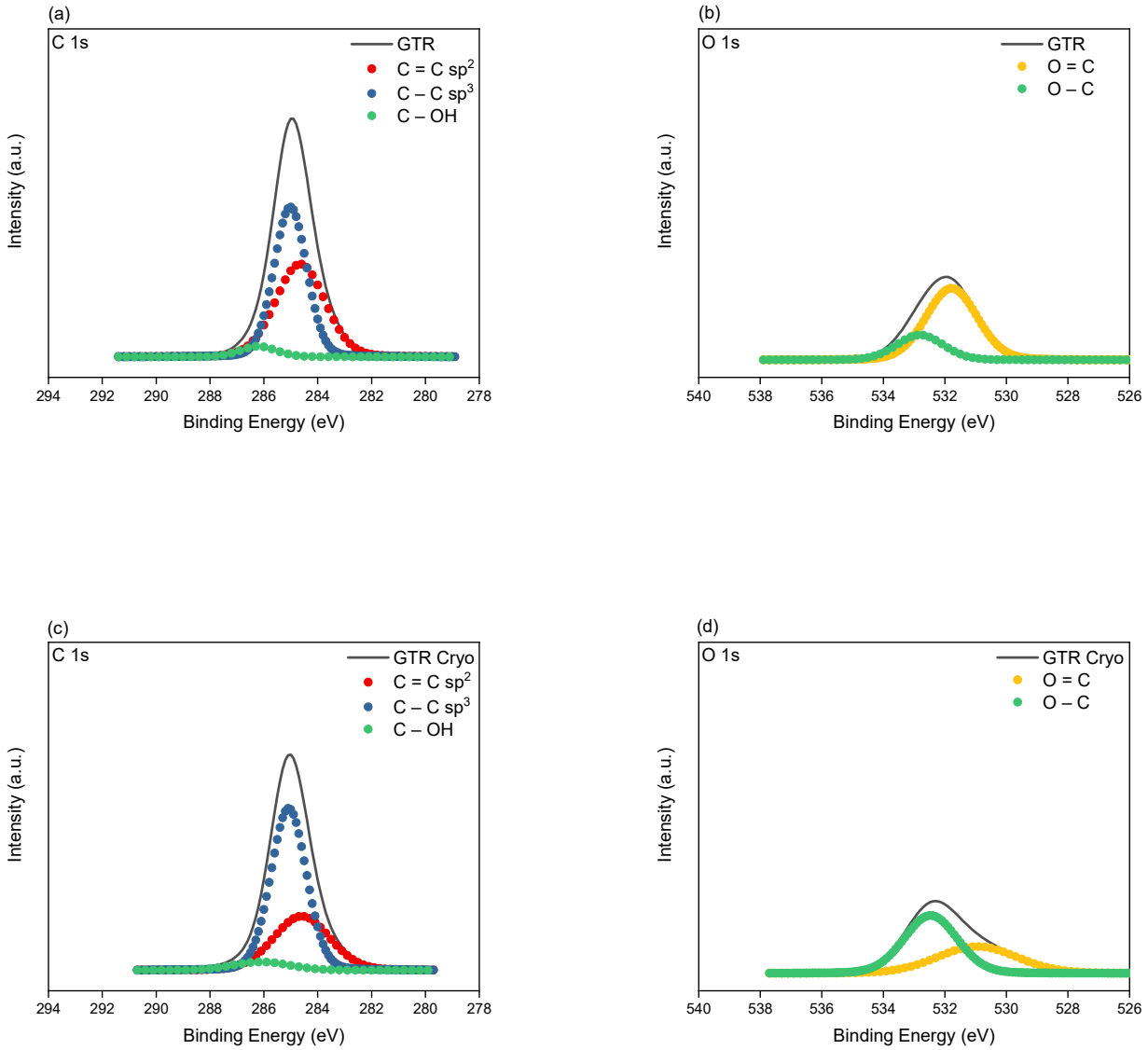
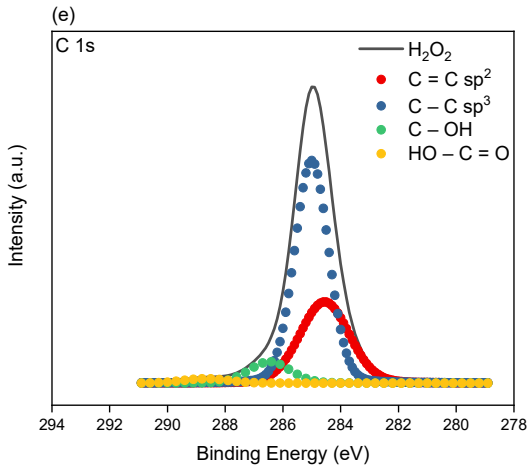


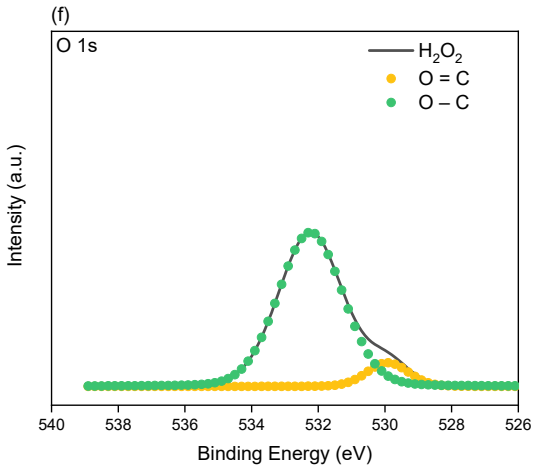
Figure S1. Particle size distribution of cryo-ground GTR and chemically modified GTR (m-GTR).

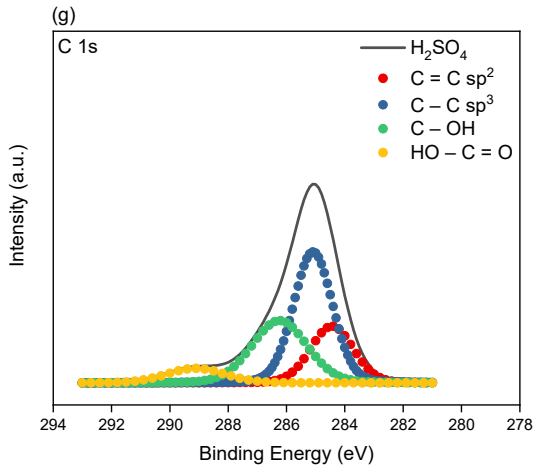
Table S1. Average particle size and diameter on cumulative percentage of cryo-ground GTR (GTR Cryo) and chemically modified GTR (m-GTR).

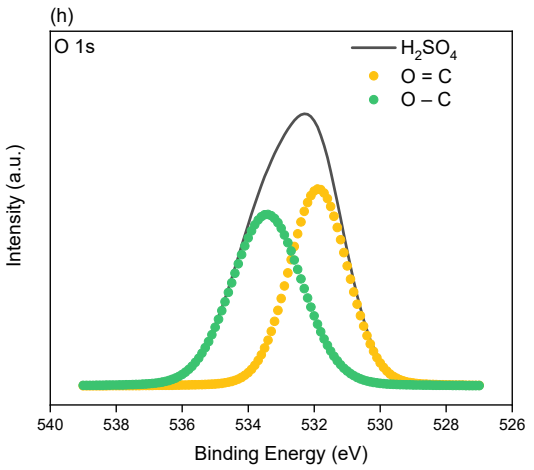
	Average Particle Size (μm)	Diameter on Cumulative Percentage (μm)		
		10	**50**	**90**
GTR Cryo	153.8	81	145	236
GTR-H_2SO_4	18.6	9	18	30
GTR-HNO_3	9.7	7	10	12
GTR-H_2SO_4/HNO_3	20.6	14	20	28

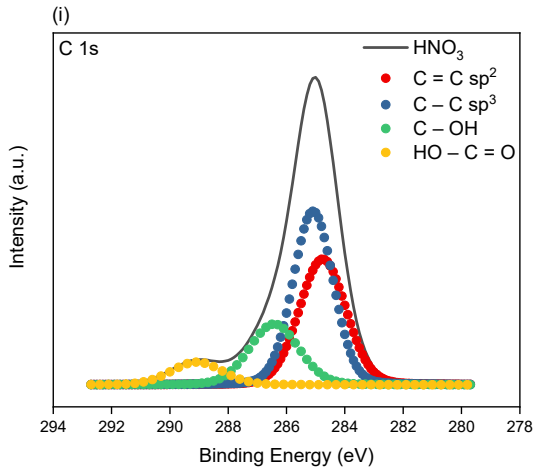


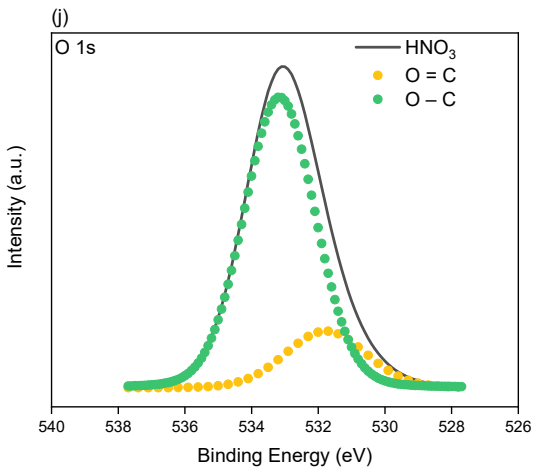

(e)
C 1s
H_2O_2
C = C sp^2
C – C sp^3
C – OH
HO – C = O
Intensity (a.u.)
294 292 290 288 286 284 282 280 278
Binding Energy (eV)


(f)
O 1s
H_2O_2
O = C
O – C
Intensity (a.u.)
540 538 536 534 532 530 528 526
Binding Energy (eV)


(g)
C 1s
H_2SO_4
C = C sp^2
C – C sp^3
C – OH
HO – C = O
Intensity (a.u.)
294 292 290 288 286 284 282 280 278
Binding Energy (eV)


(h)
O 1s
H_2SO_4
O = C
O – C
Intensity (a.u.)
540 538 536 534 532 530 528 526
Binding Energy (eV)


(i)
C 1s
HNO_3
C = C sp^2
C – C sp^3
C – OH
HO – C = O
Intensity (a.u.)
294 292 290 288 286 284 282 280 278
Binding Energy (eV)


(j)
O 1s
HNO_3
O = C
O – C
Intensity (a.u.)
540 538 536 534 532 530 528 526
Binding Energy (eV)

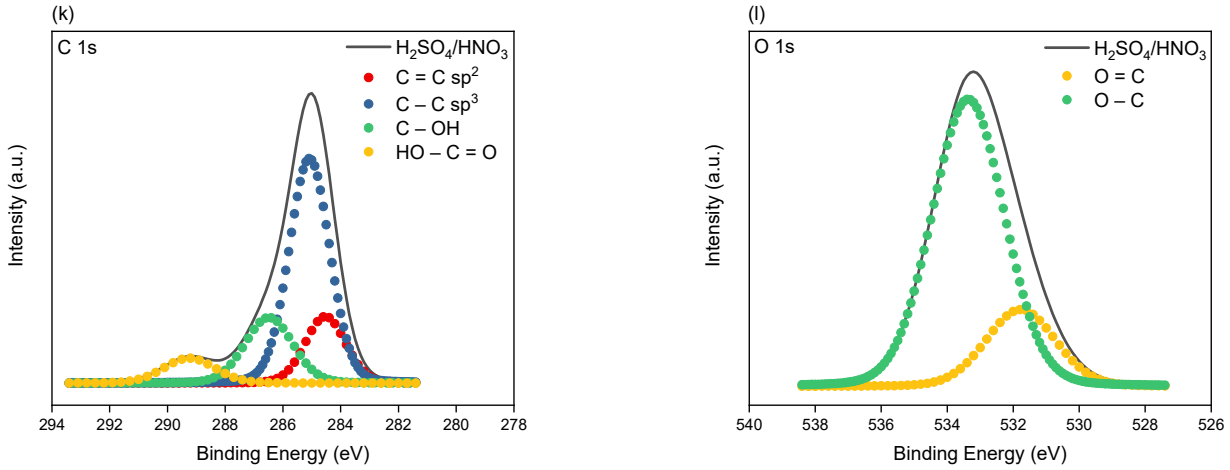


Figure S2. C and O core spectra of: (a) and (b) GTR; (c) and (d) GTR Cryo; (e) and (f) GTR modified with H_2O_2; (g) and (h) GTR modified with H_2SO_4; (i) and (j) GTR modified with HNO_3; (k) and (l) GTR modified with H_2SO_4/HNO_3.