

Enhanced Thermal and Structural Properties of Bacterial Cellulose with MgAl₂O₄ Nanoparticles Integration

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Supplementary

EDS analysis for the MgAl₂O₄ NPs:

BC:

BC-5mg:

BC - 10 mg

BC - 20 mg

Dynamic Light Scattering (DLS) and Zeta Potential Analysis:

Name	Z-Average (nm)	Polydispersity Index (PI)
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Replicate1	193.71	0.252
Replicate2	189.793	0.372
Replicate3	191.103	0.347
Average	191.54 ± 1.99	

Name	Zeta Potential (mV)	Conductivity (mS/cm)
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Replicate1	40.717	0.06
Replicate2	41.0	0.06
Replicate3	40.333	0.06
Average	40.86 ± 0.33	

XPS atomic% and ratio calculations

Element	Atomic%	Ratio
Mg	11.47	1
Al	29.33	2.557105493
O	59.21	5.162162162