

A facile one-pot approach to the fabrication of Nanocellulose/Titanium Dioxide nanocomposites with promising photocatalytic and antimicrobial activity

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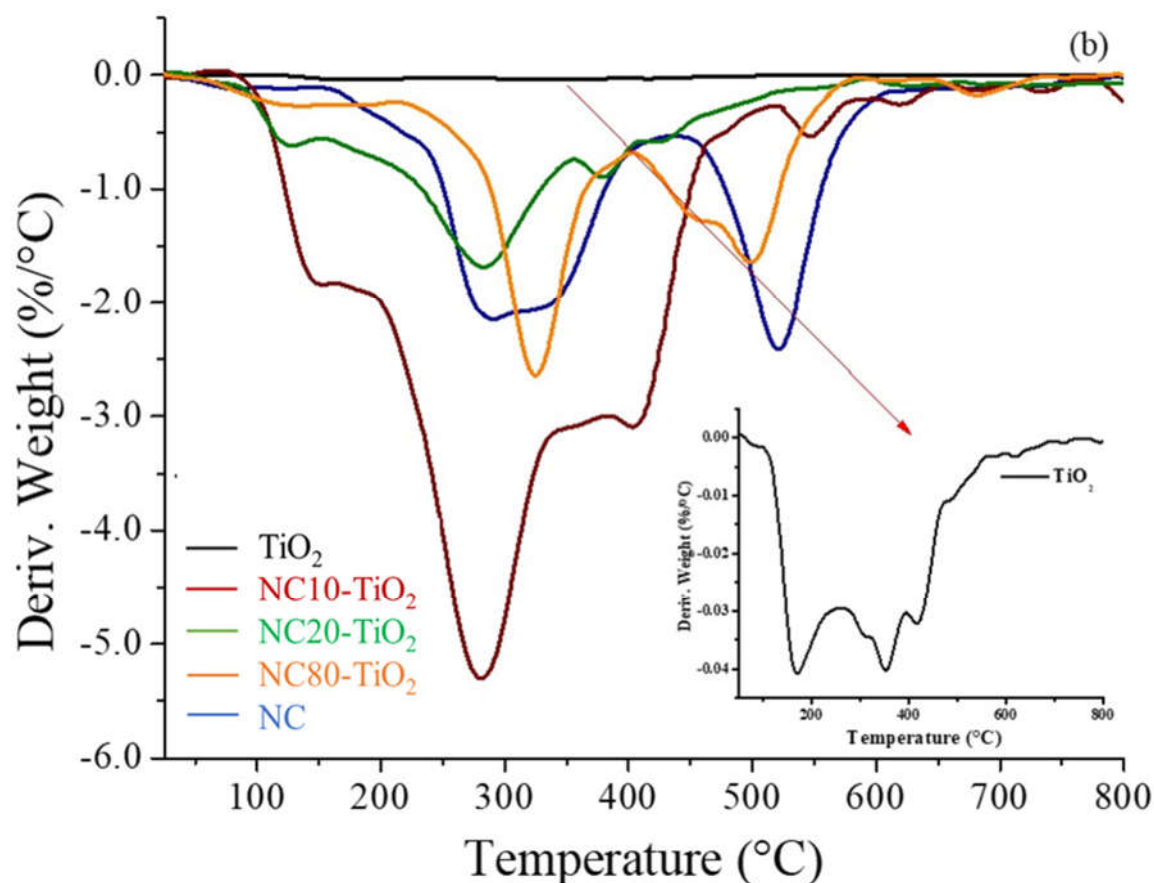


Figure S1: DTG analyses for (–) TiO₂, (–) NC, (–) NC10-TiO₂, (–) NC20-TiO₂, and (–) NC80-TiO₂.

Sample	Step	T _m (°C)	W _{tloss} (%)	RC ₆₅₀ (%)	A (s ⁻¹)	E _a (kJ mol ⁻¹)	ΔH (kJ mol ⁻¹)	ΔS (JK ⁻¹ mol ⁻¹)	ΔG _a (kJ mol ⁻¹)	r ²
TiO ₂	I	170	2.22	93.45	96.89×10 ⁵	73.65	69.97	-0.115	120.68	0.93
	II	354	4.34		117.22	<u>47.89</u>	<u>42.68</u>	<u>-0.212</u>	<u>175.31</u>	0.93
						Σ121.54	Σ112.64	Σ-0.326	Σ295.99	
NC10-TiO ₂	I	281	16.8	83.49	5.98	<u>29.00</u>	<u>24.40</u>	<u>-0.235</u>	<u>154.73</u>	0.98
						Σ29.00	Σ24.40	Σ-0.235	Σ154.73	
N20-TiO ₂	I	283	23.4	76.19	3.36	<u>26.05</u>	<u>21.43</u>	<u>-0.240</u>	<u>154.91</u>	0.95
						Σ26.05	Σ21.43	Σ-0.240	Σ154.91	
NC80-TiO ₂	I	325	39.3	21.28	82.57×10 ⁴	84.25	79.28	-0.138	161.48	0.98
	II	499	32.7		40.09×10 ⁶	<u>130.68</u>	<u>124.26</u>	<u>-0.107</u>	<u>207.09</u>	0.98
						Σ214.93	Σ203.54	Σ-0.245	Σ368.58	
NC	I	290	50.93	9.67	18.58×10 ²	54.84	50.16	-0.188	155.81	0.99
	II	522	33.77		1.48×10 ⁸	<u>146.12</u>	<u>139.51</u>	<u>-0.097</u>	<u>216.39</u>	0.98
						Σ200.96	Σ189.67	Σ-0.284	Σ372.19	

Table S1: TG, DTG, kinetic and thermodynamic data from the thermal decomposition steps of prepared samples

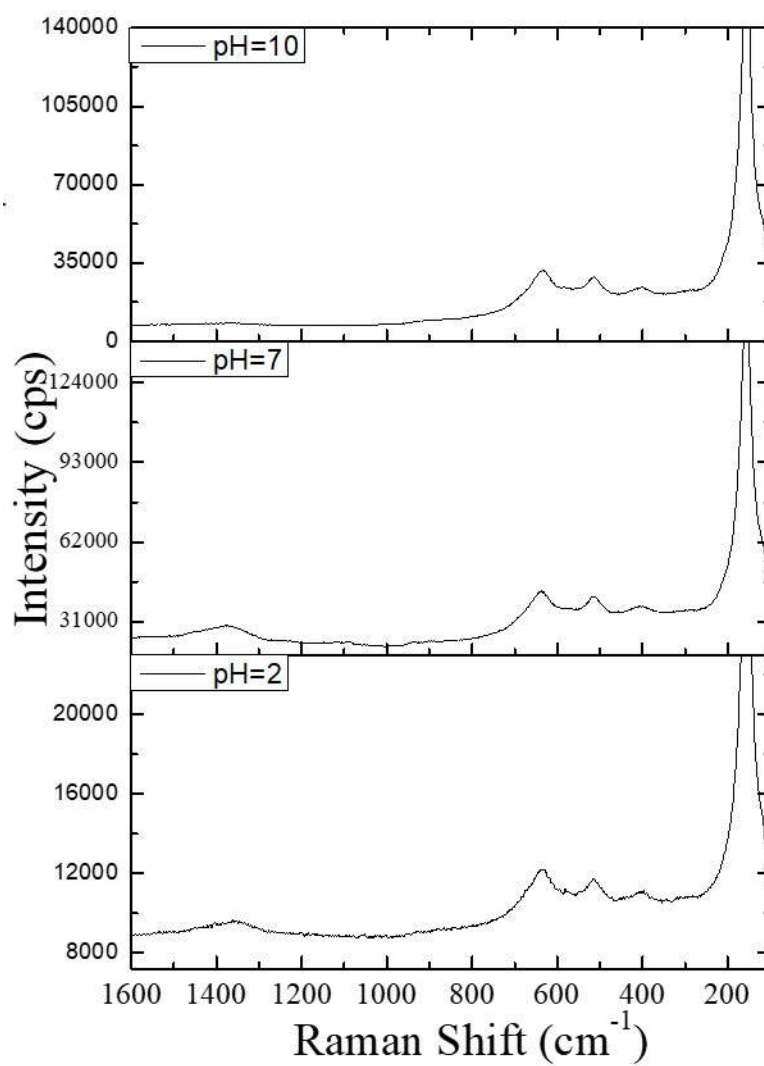


Figure S2: Raman spectra of NC20-TiO₂ sample after photocatalytic tests at different pH

Sample		Inhibition zone diameter (mm/Sample)				
		Bacterial species				Fungi
		G ⁺		G ⁻		<i>Candida albicans</i>
		<i>Bacillus subtilis</i>	<i>Staphylococcus aureus</i>	<i>Escherichia coli</i>	<i>Pseudomonas aeruginosa</i>	
Standard	Ampicillin Antibacterial agent	26	21	25	26	--
	Amphotericin B Antifungal agent	--	--	--	--	21
TiO ₂		25	28	30	27	10
NC20-TiO ₂		23	25	21	24	10
NC80-TiO ₂		20	23	22	21	9

Table S2: Diameter size of the inhibition zone for TiO₂, NC20-TiO₂, and NC80-TiO₂ nanocomposites through different bacteria.