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Supplementary Materials

Performant Composite Materials Based On Oxide Semiconductors and Metallic Nanoparticles Generated from Cloves and Mandarin Peel Extracts

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Table S1. FT-IR bands' assignment for phyto-derived materials synthesized in this study.

Sample	FT-IR Bands (cm^{-1})	Attribution	Ref.
ZnO-CUI / AgZnO-CUI	3209 (intense, broad)/3192 (broad)	O–H bending and stretching vibrations in phenolic compounds, alcohols, and polysaccharides N–H stretching vibrations (peptides and proteins)	[1, 2]
	1638; 1596/ 1638; 1525	Amide I, due to –C=O stretch in proteins Carboxylate (–COO–) groups	[3, 4]
	1403	O–H bend (phenol or tertiary alcohol)	[4]
	1065; 982/ 1058; 968	Antisymmetric stretching of C–O group of polysaccharides, alcohols	[4, 5]
	857/ 843	Hydrogen-bonded O–H out-of-plane bending	[4]
	533/512	Zn-O stretching vibration	[6]
ZnO-MAND/ AgZnO-MAND	3234/3268 (very broad band)	The hydrogen-bonded O–H (bending and stretching vibrations) groups in phenolic compounds and in polysaccharides like pectin N–H stretching vibrations (peptides and proteins)	[2, 4, 7, 8]
	1645, 1528	Carboxylate groups (–COO–) present in aminoacids or in pectin derived from mandarin peels Amide I, arising from –C=O stretch in proteins	[4]
	1403 (weak)	Phenol or tertiary alcohol, O–H bend	[4]
	1044, 975/ 1009 (sharp band)	Stretching vibration of –C–O–C– ether linkage groups of polysaccharides (pectin ν (CO), ν (CC) ring of polysaccharides (like pectin)	[4, 9]
	857	Hydrogen-bonded O–H out-of-plane bending	[4]
	525/545 (sharp)	Zn-O stretching vibration	[6]

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