

Supplementary data

Figure S1. EDS images of AgSnO₂ microparticles

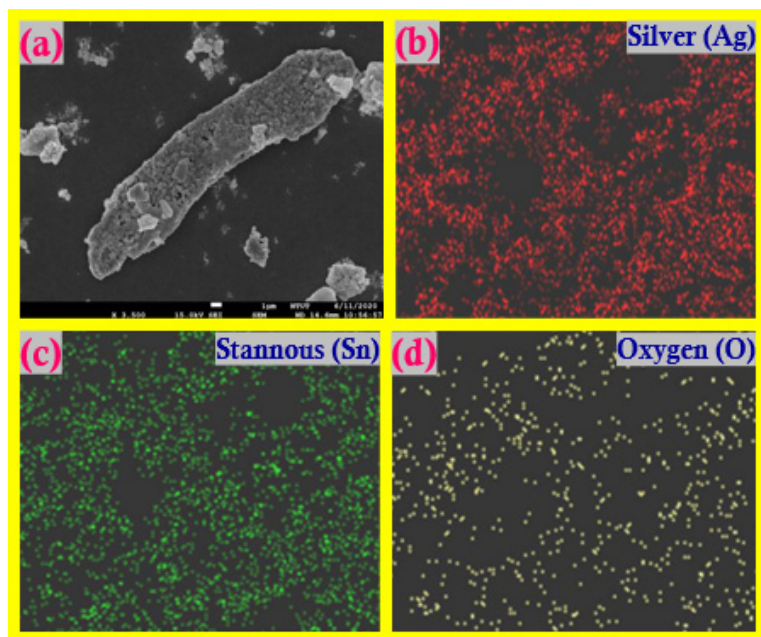


Figure S2. ¹H-NMR spectrum of PBAT

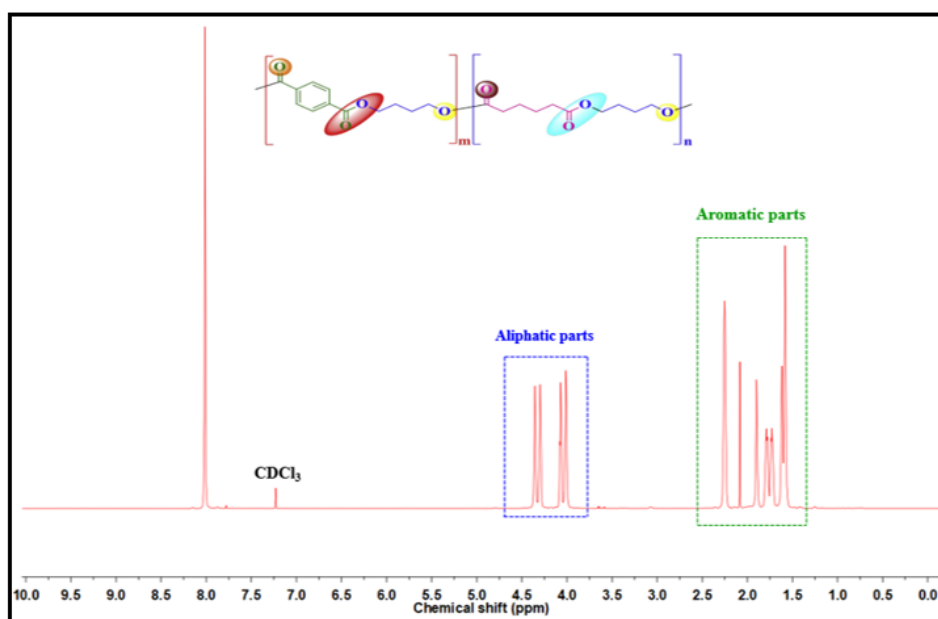


Figure S3. DSC curve of PBAT

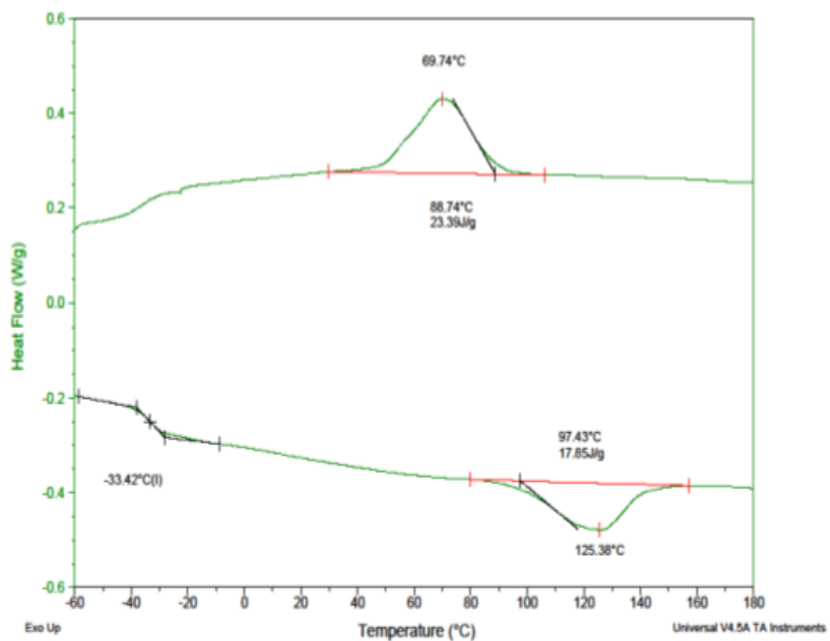


Figure S4. TGA curves (A); DSC curves (B), of PBAT and PBAT/AgSnO₂ composite films: (A) ACP-0.0, (B) ACP-0.5, (C) ACP-1.0, (D) ACP-2.0, (E) ACP-3.0, and (F) ACP-5.0.

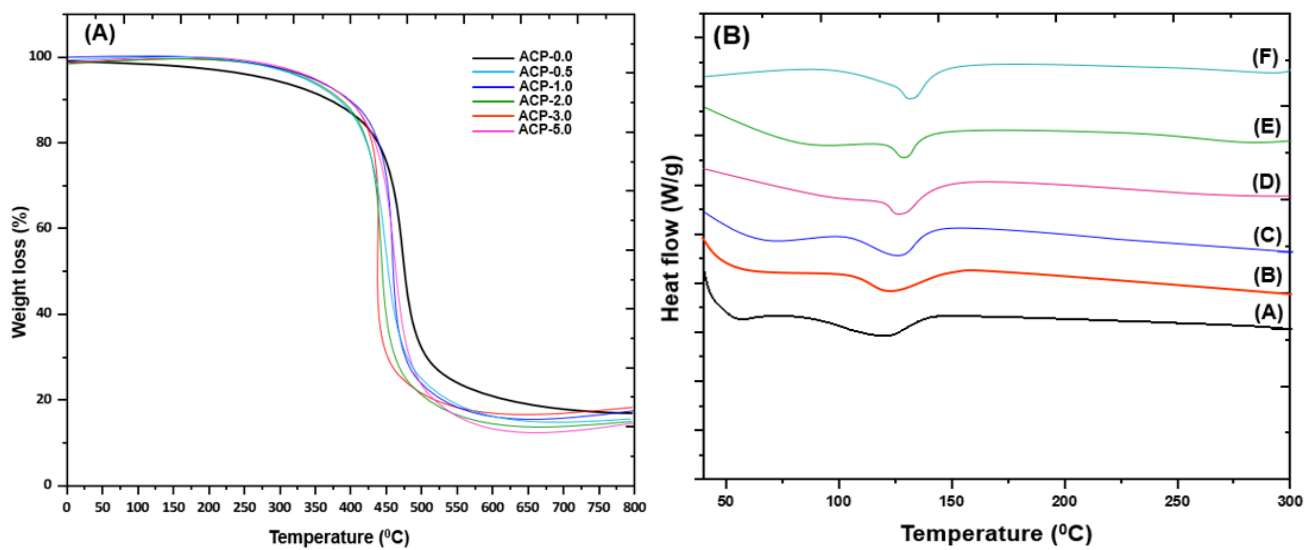


Figure S5. Images of PBAT film and PBAT/AgSnO₂ composites after burial in soil for 1, 2, 4 and 8 weeks



Table S1. Compositions of PBAT/AgSnO₂ prepared and their nomenclature

S. No.	Nomenclature	PBAT (g)	AgSnO ₂ microparticles (mg)	
			Percentages of PBAT	MPs (mg)
1.	ACP-0.0	2.0	2.00	00.0
2.	ACP-0.5	2.0	1.99	10.0
3.	ACP-1.0	2.0	1.98	20.0
4.	ACP-2.0	2.0	1.96	40.0
5.	ACP-3.0	2.0	1.94	60.0
6.	ACP-5.0	2.0	1.90	100.0

Table S2. Antimicrobial activity of PBAT/AgSnO₂ composites against *S. aureus* and *E. coli*

Strain	Zone of inhibition in (mm)					
	ACP-0.0	ACP-0.5	ACP-1.0	ACP-2.0	ACP-3.0	ACP-5.0
<i>S. aureus</i>	8.00 ± 3.84 ^c	8.11 ± 3.84 ^b	8.45 ± 2.35 ^b	8.77 ± 1.85 ^c	9.36 ± 2.63 ^a	14.20 ± 2.56 ^a
<i>E. coli</i>	8.00 ± 1.51 ^b	8.29 ± 2.25 ^a	8.62 ± 2.78 ^c	9.13 ± 3.01 ^c	12.84 ± 3.40 ^b	16.19 ± 4.05 ^c

Results are quoted as the mean ± standard deviation of three replicates. a-c: Different letters within the same column indicate significant differences among film samples ($p < 0.05$).