

Table 1: FTIR frequency range and functional groups present in the SS, BB, S&S, Cons, PB, and KP.

Wavenumbers (cm ⁻¹)	Bond	Functional Group	Adsorbent	Reference
504 - 799	C-I, C-Br	Alkyl halides	Cons, PB, BB, S&S, SS	Meenambal et al., 2012
1025	C-N	Amine	Cons, PB	Rushikesh et al., 2018
1034 - 1080	C-O-C	Ethers	SS, S&S, BB	Muruganantham et al., 2009
1214	C-N	Aliphatic amines	Cons, PB	Rushikesh et al., 2018
1240	C=O	Alkyl ketone	SS, S&S, BB	Deepashree et al., 2013
1530	R-OH	Phenol ring	SS	Muthanna et al., 2009
1620	C=C	Alkene	PB	Rushikesh et al., 2018
1528 -1632		Diketones	SS, S&S, BB	Deepashree et al., 2013 Menaambal et al., 2012
1640	C=O	Amide	KP	Y. Liu et al., 2016
1745	C=O	Ketone	S&S	
1800	C=O	Anhydride	BB	
2924 – 2934	R-CH ₃	Methyl group	SS, S&S, BB	Deepashree et al., 2013
Circa 3290	O-H	Hydroxyl group	KP, SS, S&S, BB.	Deepashree et al., 2013
Circa 3790	O-H	Alcohol	SS, BB	Salimon et al., 2011
Stretching				

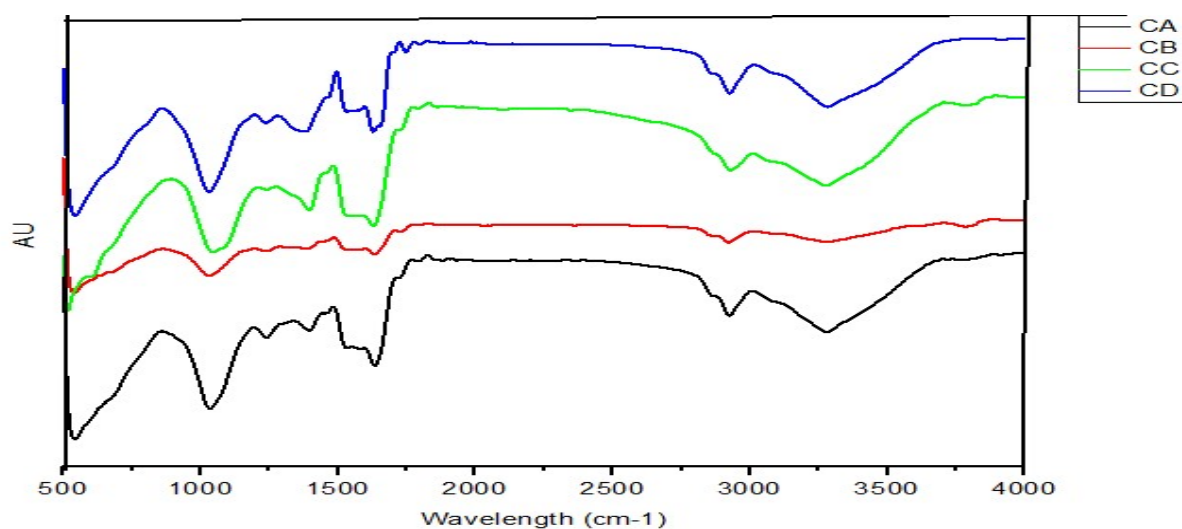


Figure 1: FTIR spectra for sewage sludge CA) after a growth period of 24 h, CB) after oven drying for 24 h at 74°C, CC) after exposure to $Pb(NO_3)_2$, and CD) 14 h after adding $Pb(NO_3)_2$.

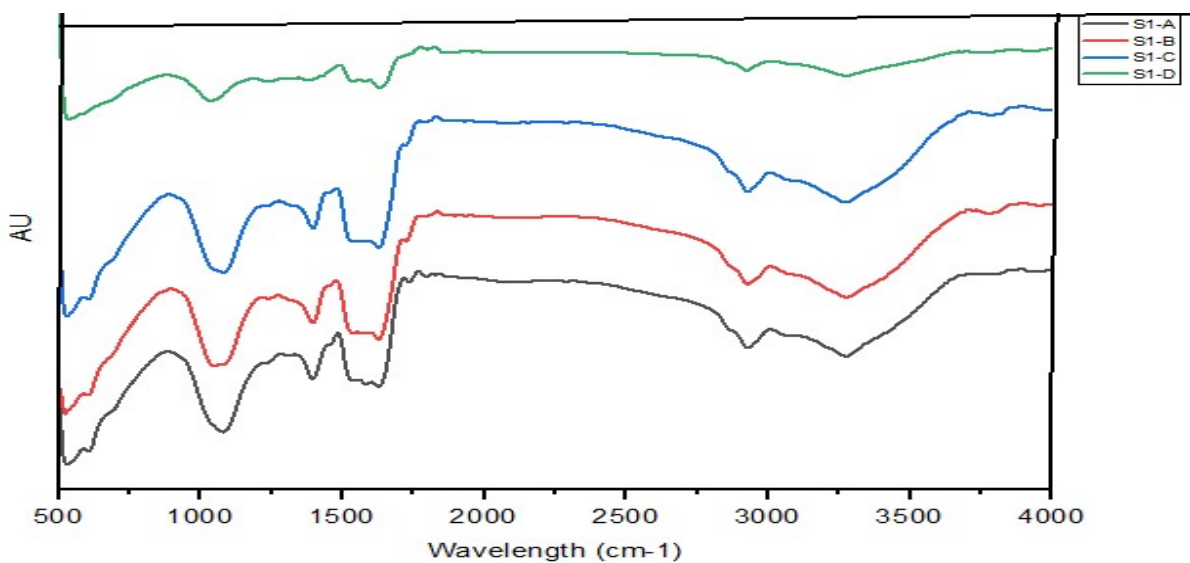


Figure 2: FTIR spectra for bran-based filler bacteria S1-A) after a growth period of 24 h, S1-B) after oven drying for 24 h at 74°C, S1-C) after exposure to $Pb(NO_3)_2$, and S1-D) 14 h after adding $Pb(NO_3)_2$.

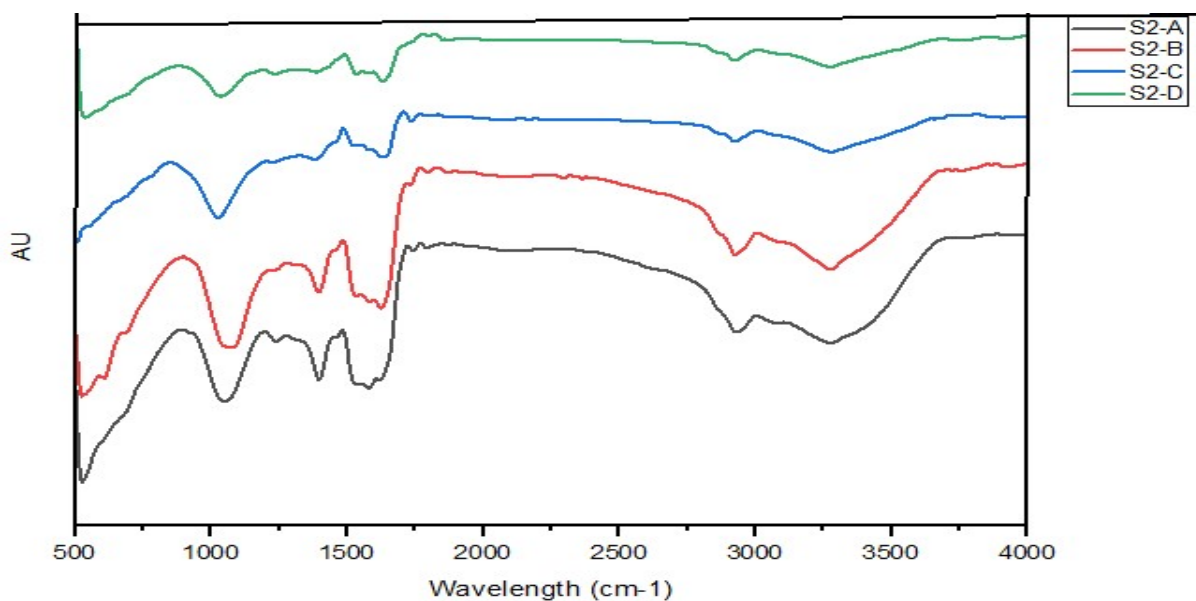


Figure 4: FTIR spectra for salt-and-starch filler based bacteria S2-A) after a growth period of 24 h, S2-B) after oven drying for 24 h at 74°C, S2-C) after exposure to $Pb(NO_3)_2$ and S2-D) 14 h after adding $Pb(NO_3)_2$.

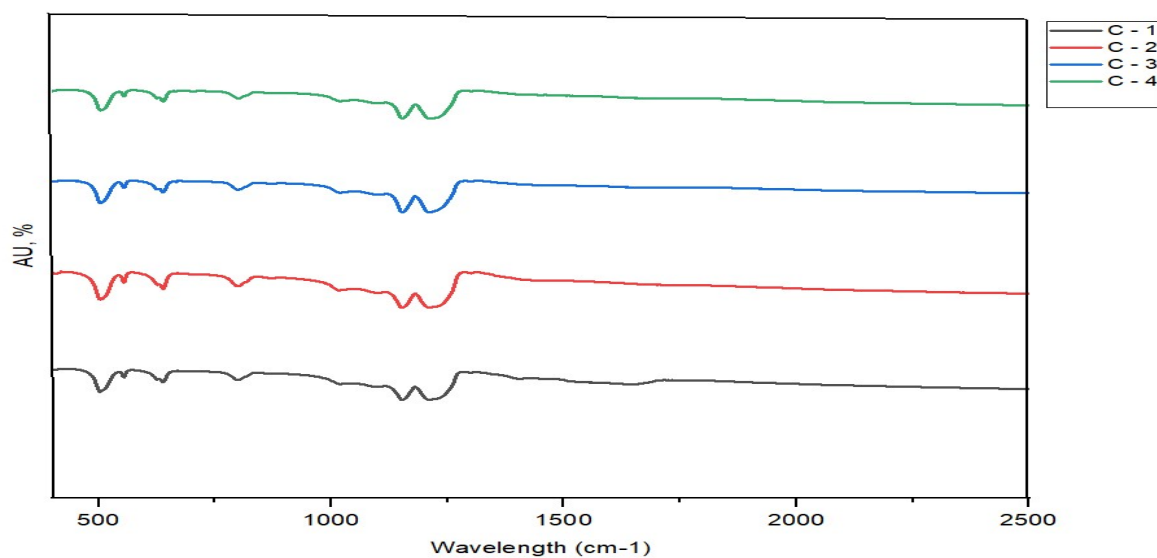


Figure 5: FTIR spectra of the consortium C-1) after a growth period of 24 h, C-2) after oven drying at 74C for 24 h, C-3) after exposure to 100 ppm of $Pb(NO_3)_2$, and C-4) 14 h after adding 100 ppm of $Pb(NO_3)_2$.

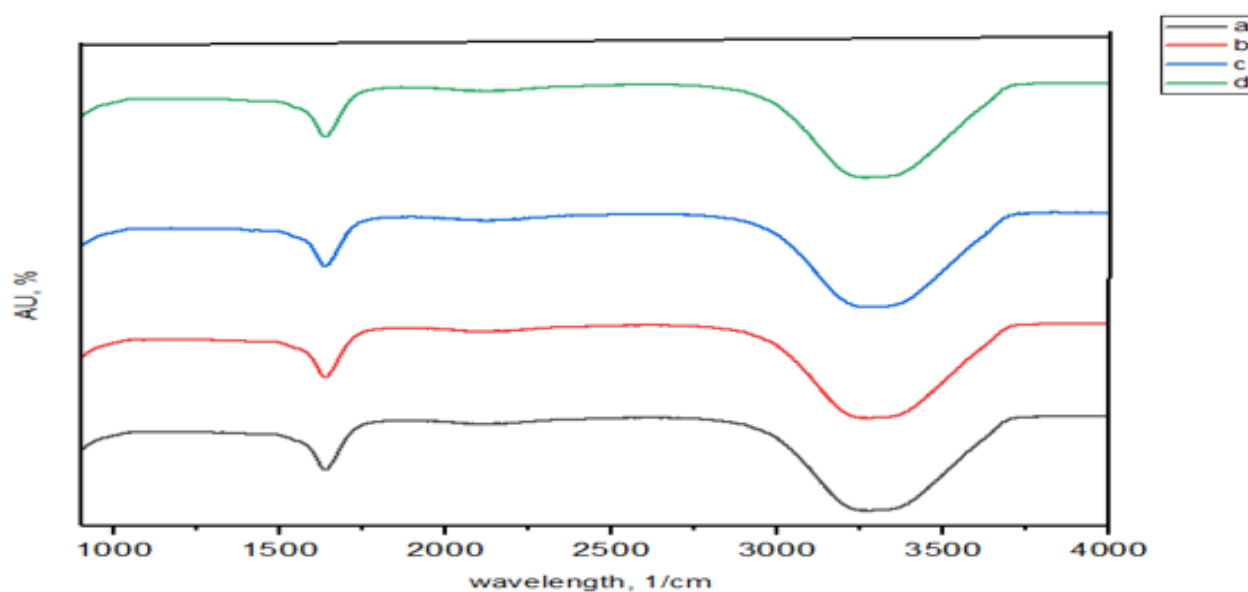


Figure 6: FTIR spectra of *K. pneumoniae* a) after a growth period of 24 h, b) after oven drying for 24 h at 74°C, c) after exposure to $Pb(NO_3)_2$, and d) 14 h after adding $Pb(NO_3)_2$.

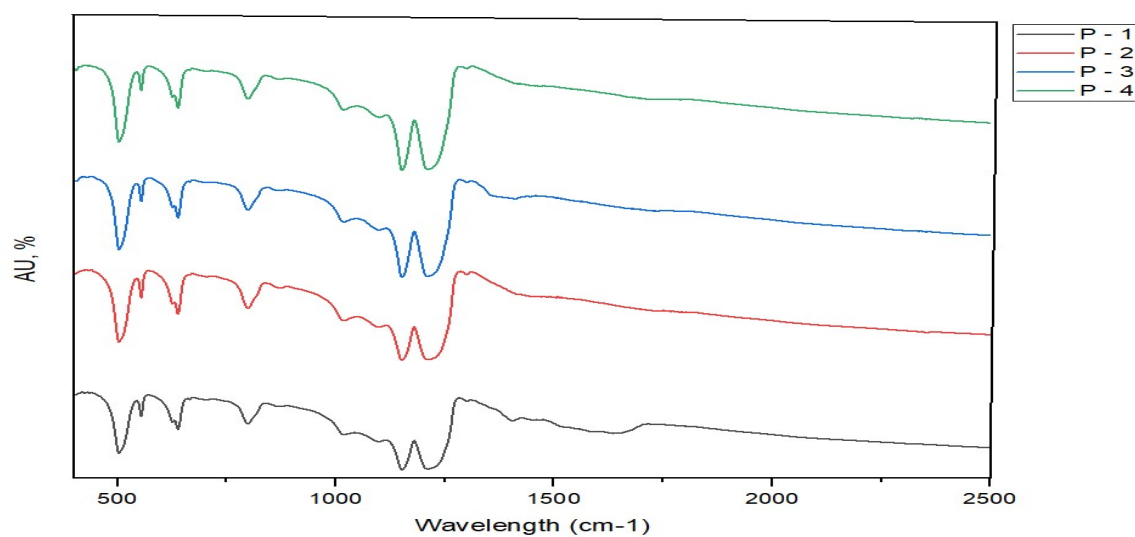


Figure 7: FTIR spectra of *P. bifementans* P-1) after a growth period of 24 h, P-2) after oven drying at 74°C for 24 h, P-3) after exposure to 100 ppm of $Pb(NO_3)_2$, and P-4) 14 h after adding 100 ppm of $Pb(NO_3)_2$.