

SUPPLEMENTARY INFORMATION

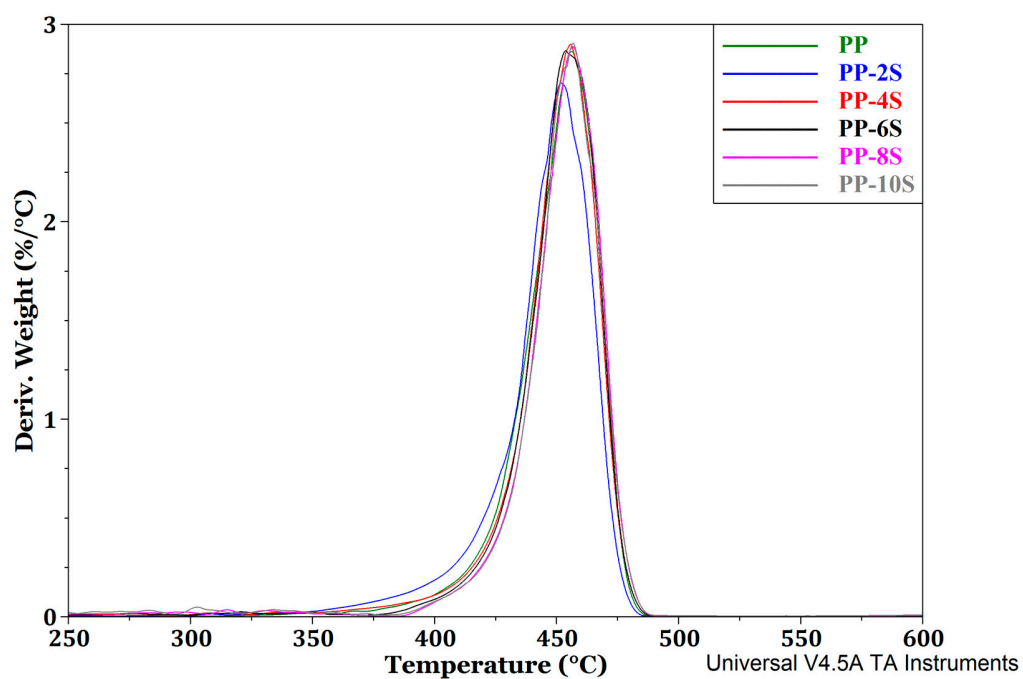


Figure S1. DTGA thermograms for PP-S composites

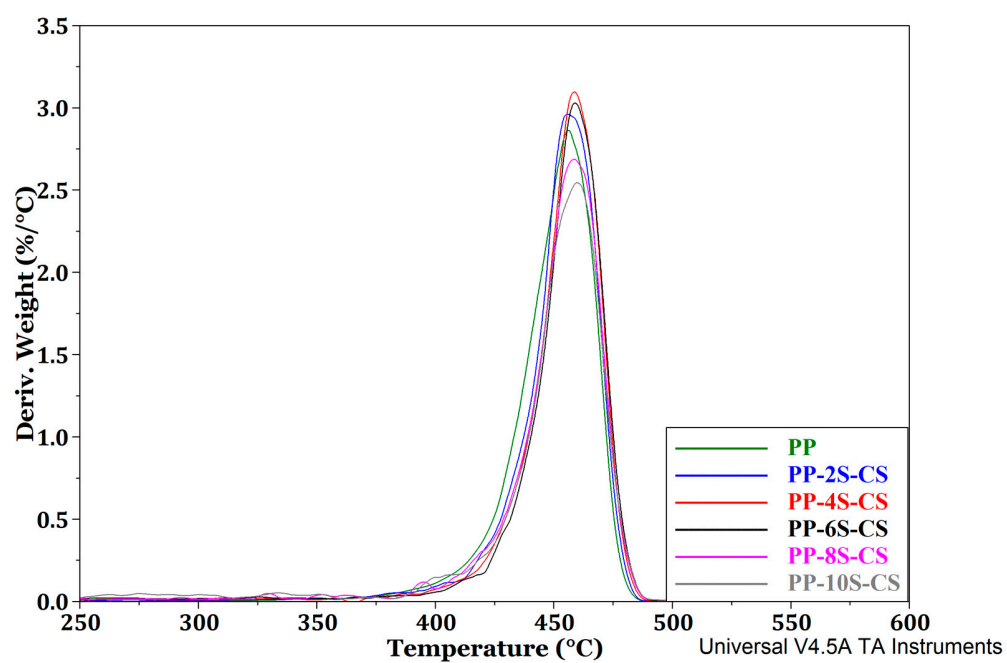


Figure S2. DTGA thermograms for PP-S-CS composites.

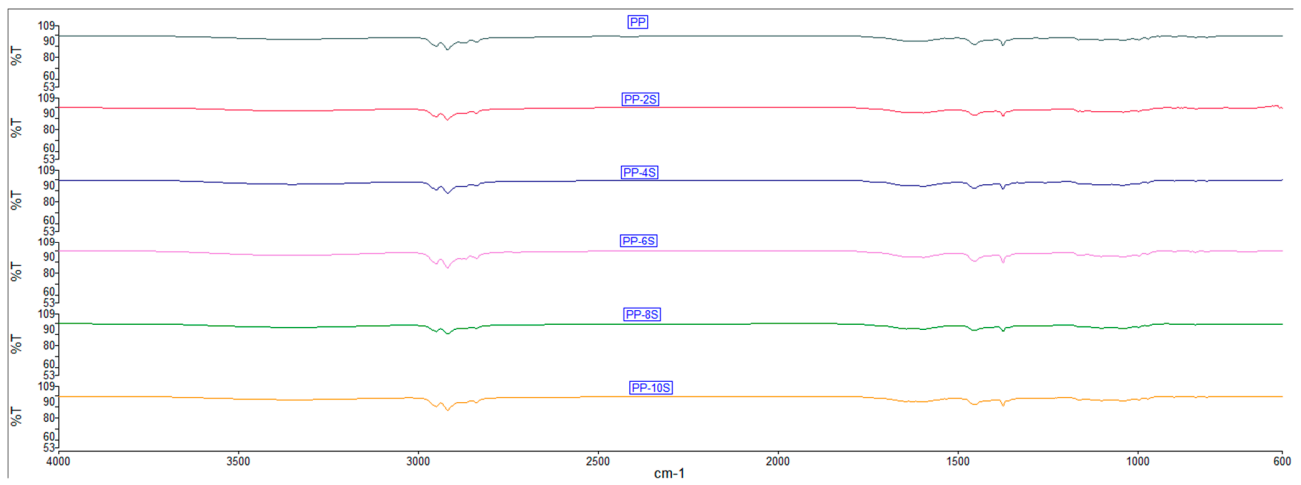


Figure S3. IR spectra for PP, and PP-S composites

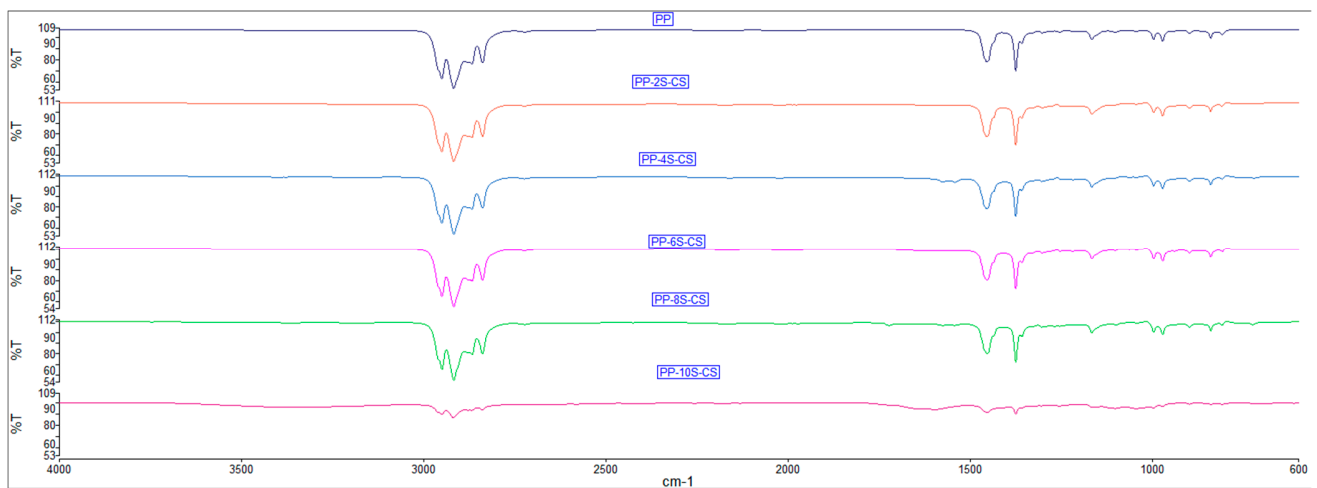


Figure S4. IR spectra for PP, and PP-S-CS composites

Density composites.

The Composite densities were determined by pycnometer volume displacement measurements. The calculation was as follows:

$$\rho = \frac{P_1 - P_2}{P_3 - P_2}$$

Where ρ is solid density, P1 represents the full liquid pycnometer weight, P2 is the sum of full pycnometer and outside solid weight and P3 is full liquid inside solid pycnometer weight. Density measurements were carried out five times for each composite.

Table S1. Density de PP-S composites and PP-S-CS composites

| Material | Density, gr/ml |
|-----------|----------------|
| PP | 1.1409 |
| PP-2S | 1.2792 |
| PP-4S | 1.3105 |
| PP-6S | 0.9562 |
| PP-8S | 0.9468 |
| PP-10S | 0.9093 |
| PP-2S-CS | 1.4424 |
| PP-4S-CS | 1.595 |
| PP-6S-CS | 0.96 |
| PP-8S-CS | 0.96606 |
| PP-10S-CS | 0.9134 |

According with results, the composites density show that for low content of sargassum particles without CS, the density increase compared with PP pristine, this is attributed to good interaction between particles and PP matrix; and with 6 phr and higher content, the density decrease, this decreasing in density is attributed to a bad interaction between particles an PP matrix. Same behavior is observed for PP-sargassum particle composites. This results are according with DMA results that indicate that low content of sargassum particles have a better interactions with PP. In the other hand, when CS is added to PP-sargassum particle composites, the density shows an increase compared with composites without CS, indicative that CS improve the interaction of sargassum particles and PP matrix [50].

1- Amieva, E. J. C., Velasco-Santos, C., Martínez-Hernández, A. L., Rivera-Armenta, J. L., Mendoza-Martínez, A. M., & Castaño, V. M. (2015). Composites from chicken feathers quill and recycled polypropylene. *Journal of Composite Materials*, 49(3), 275-283.