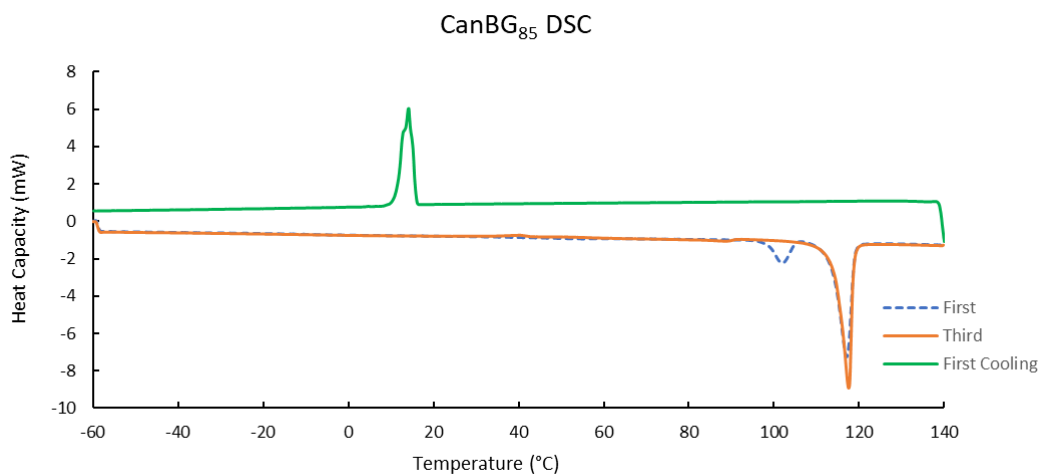
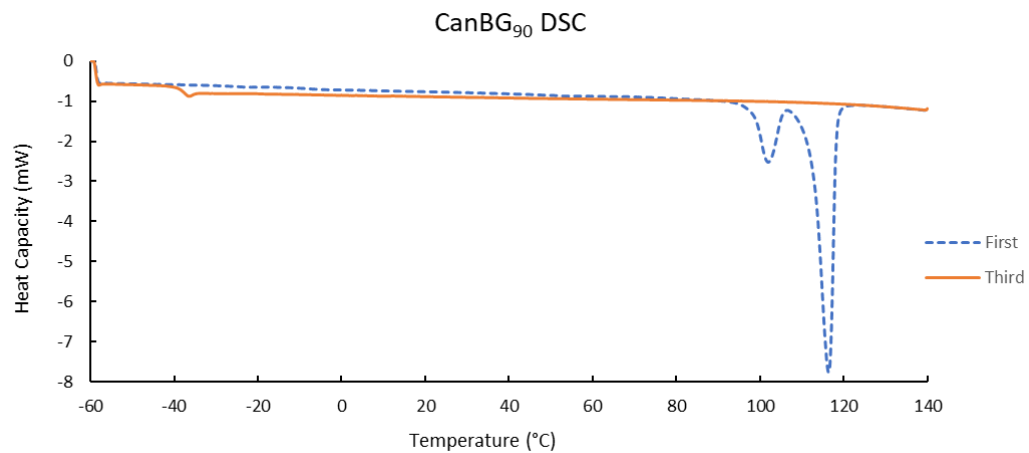


## **High Strength Composites from Low-Value Animal Coproducts, Plant Oils and Industrial Waste Sulfur**

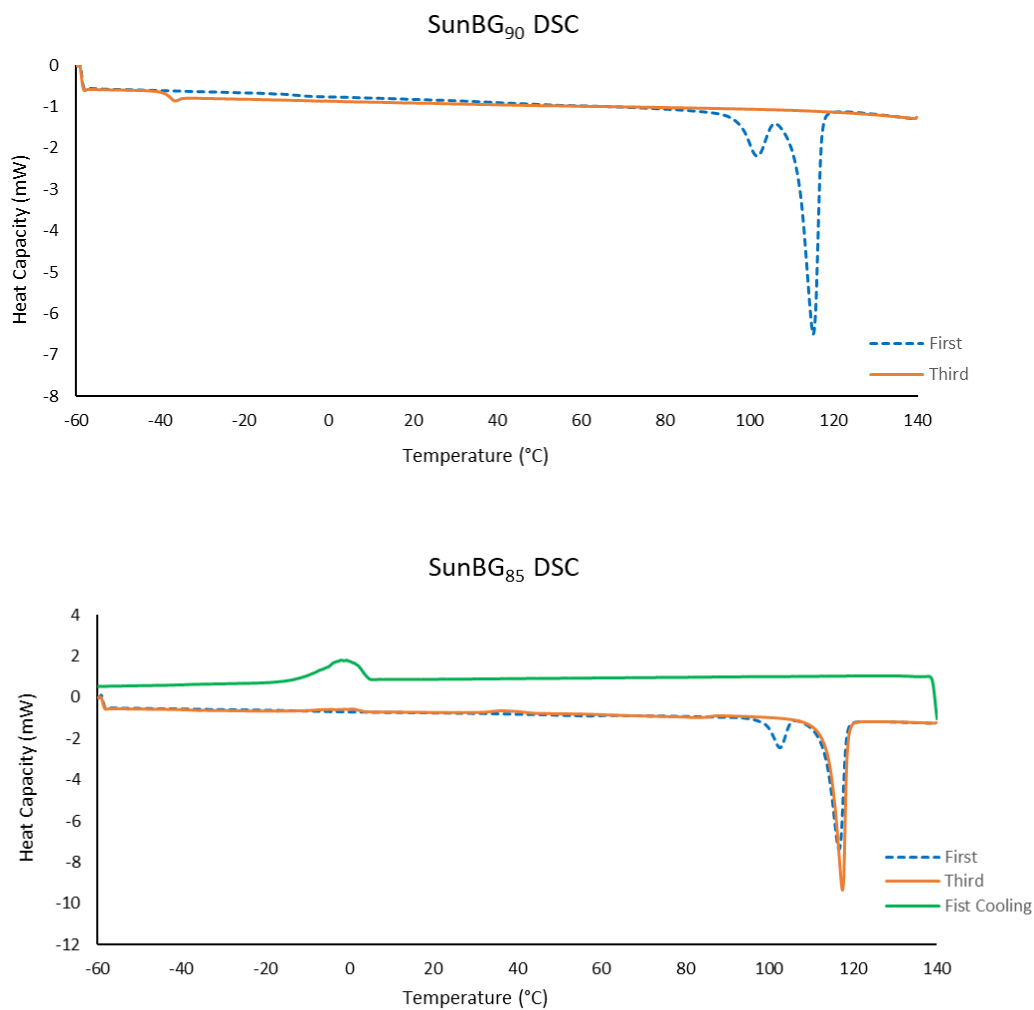
**Claudia V. Lopez,<sup>a</sup> Ashlyn D. Smith<sup>a</sup> and Rhett C. Smith<sup>\*a</sup>**

<sup>a</sup> Department of Chemistry and Center for Optical Materials Science and Engineering Technology, Clemson University, Clemson, SC 29634, USA.

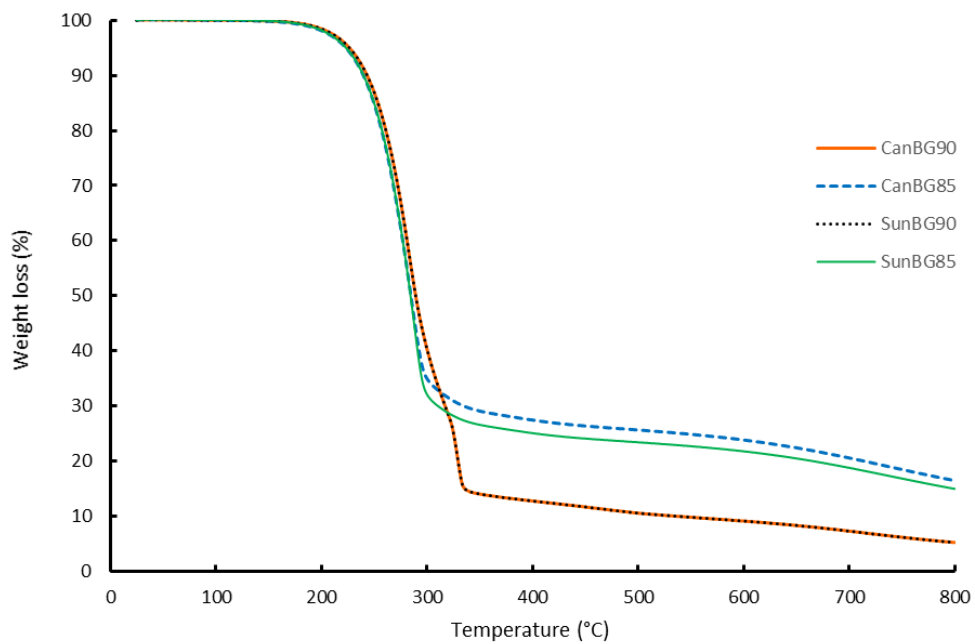
Correspondence to: Rhett C. Smith (E-mail: [rhett@clemson.edu](mailto:rhett@clemson.edu))



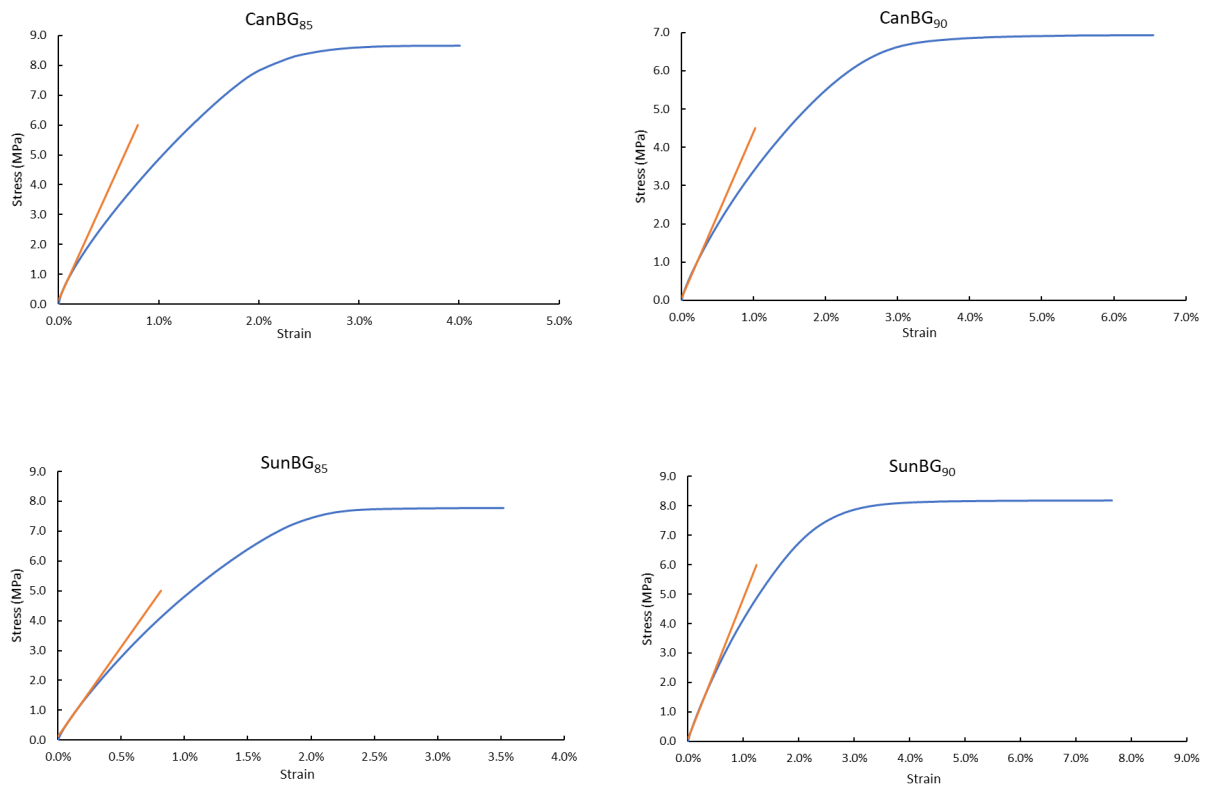
**Figure S1.** Differential scanning calorimetry (DSC) traces for **CanBG<sub>90</sub>** and **CanBG<sub>85</sub>**. In every plot, we observed the first heating cycle (blue-dotted line), third heating cycle (orange line), and first cooling cycle (green line).



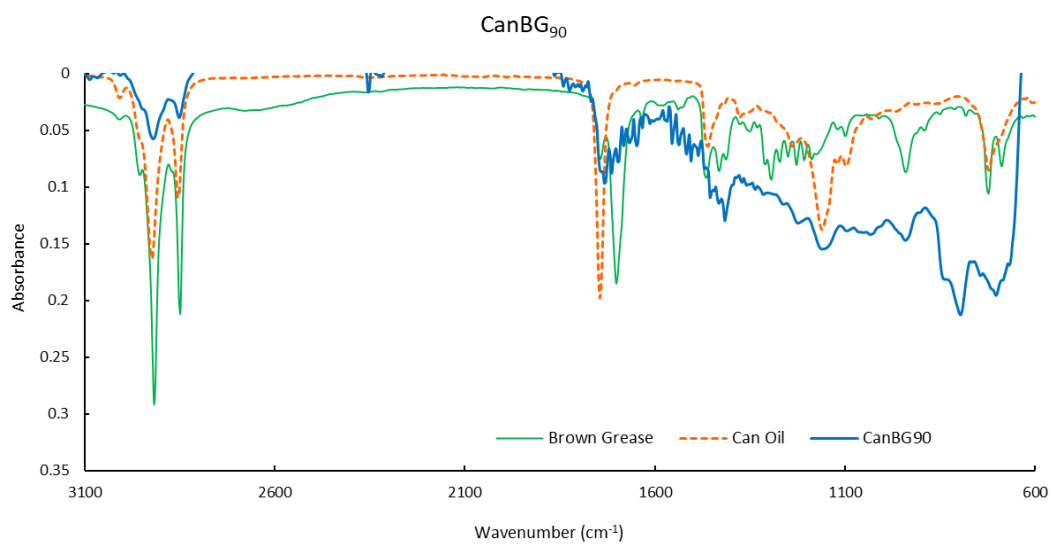
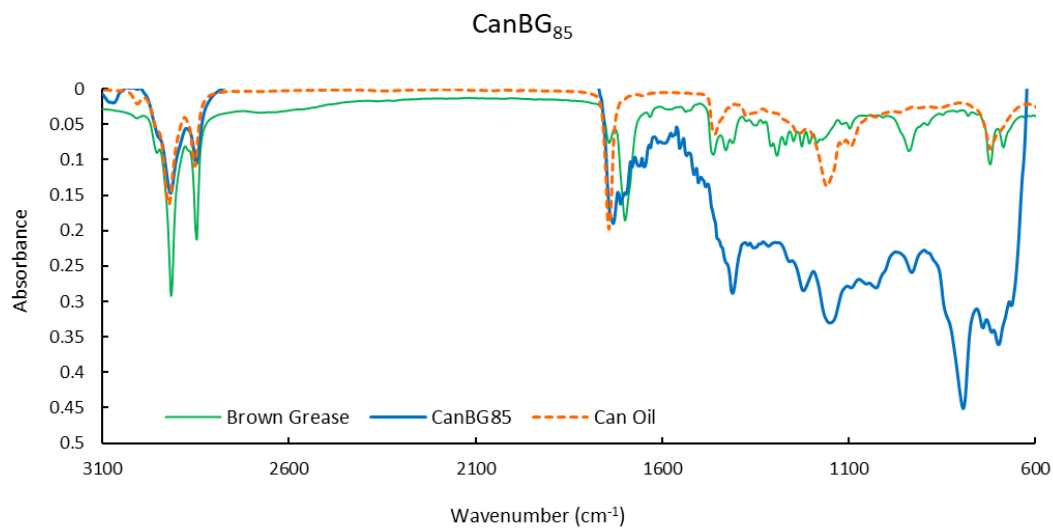
**Figure S2.** Differential scanning calorimetry (DSC) traces for **SunBG<sub>90</sub>** and **SunBG<sub>85</sub>**. In every plot, we observed the first heating cycle (blue-dotted line), third heating cycle (orange line), and first cooling cycle (green line).



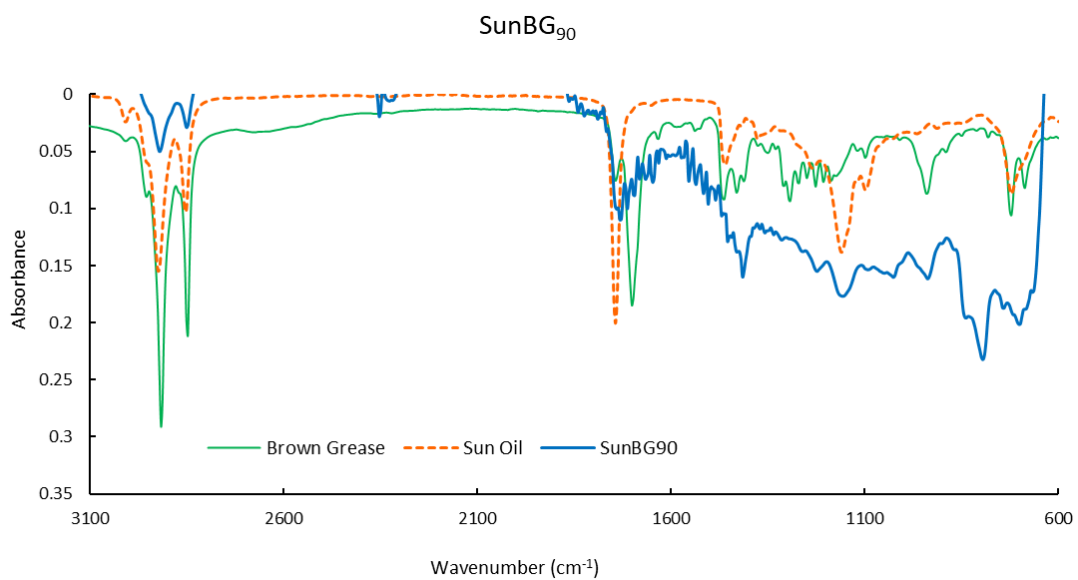
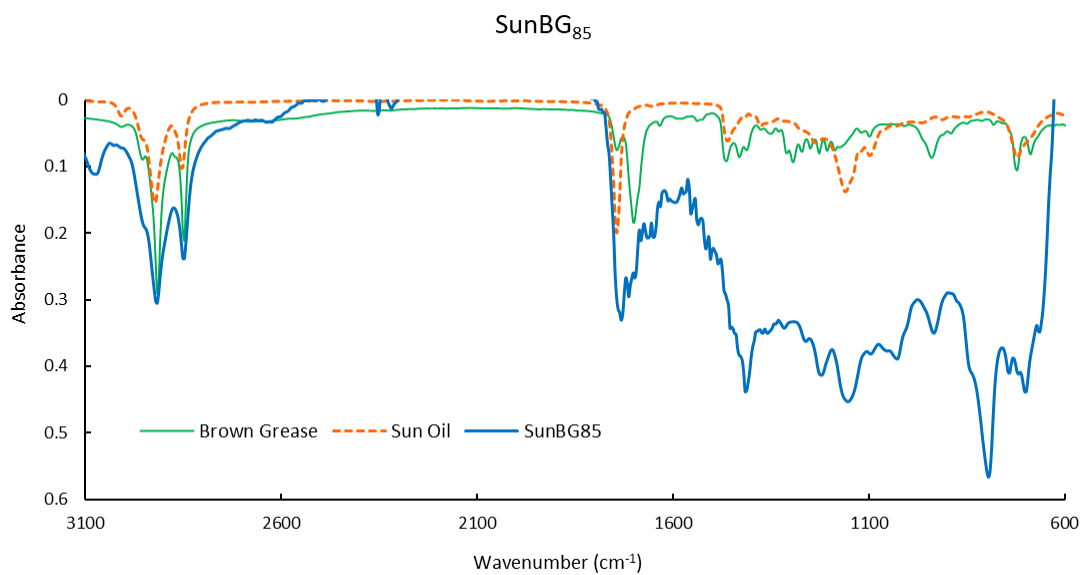
**Figure S3.** Thermogravimetric analysis (TGA) traces for **CanBG<sub>90</sub>**, **CanBG<sub>85</sub>**, **SunBG<sub>90</sub>**, and **SunBG<sub>85</sub>**.



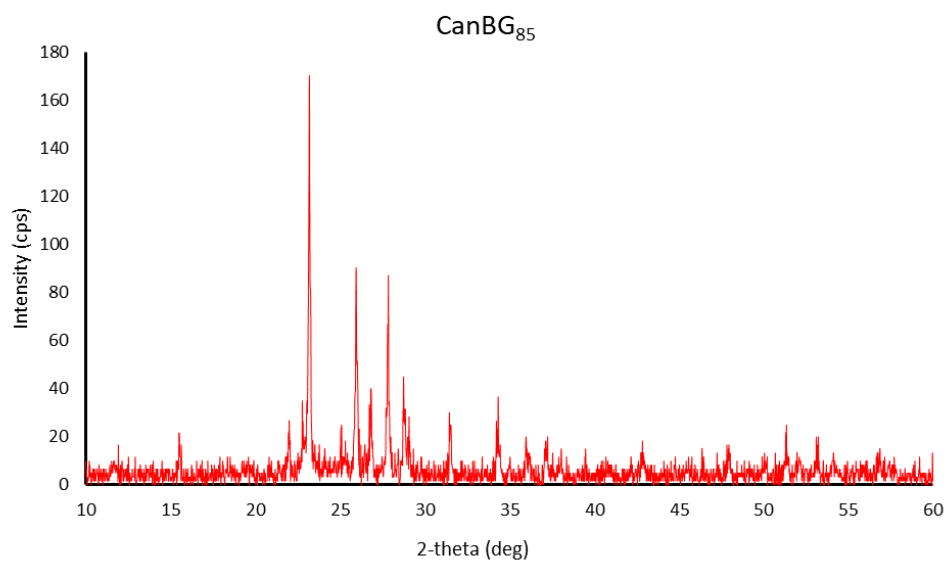
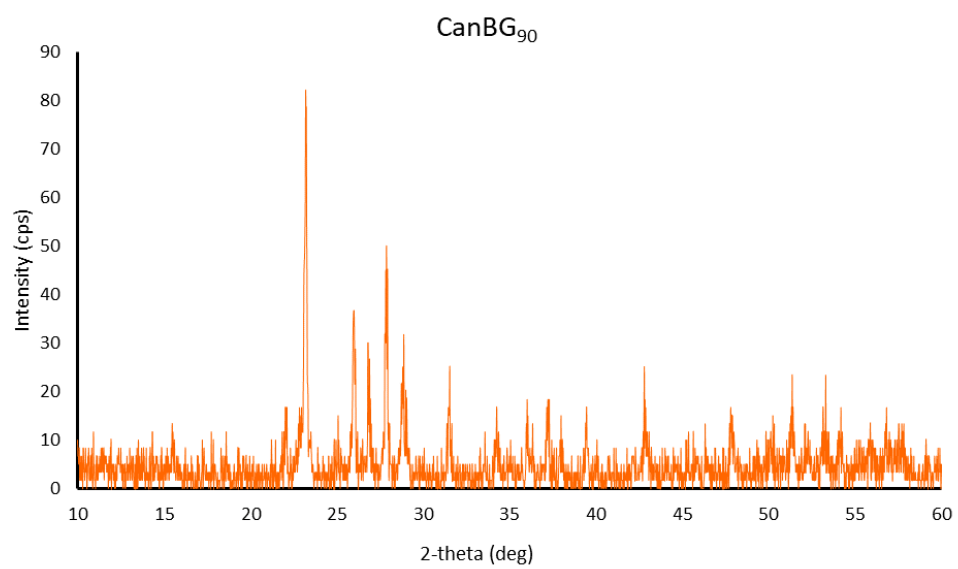
**Figure S4.** Stress-strain curves of **CanBG<sub>90</sub>**, **CanBG<sub>85</sub>**, **SunBG<sub>90</sub>**, and **SunBG<sub>85</sub>** determined from Dynamic mechanical analysis (DMA) data. The orange lines represent the propagations of the linear regions of each stress-strain curve. All the samples were tested in duplicates.



**Figure S5.** Fourier-transform infrared spectroscopy (FT-IR) traces for **CanBG<sub>90</sub>** and **CanBG<sub>85</sub>**.

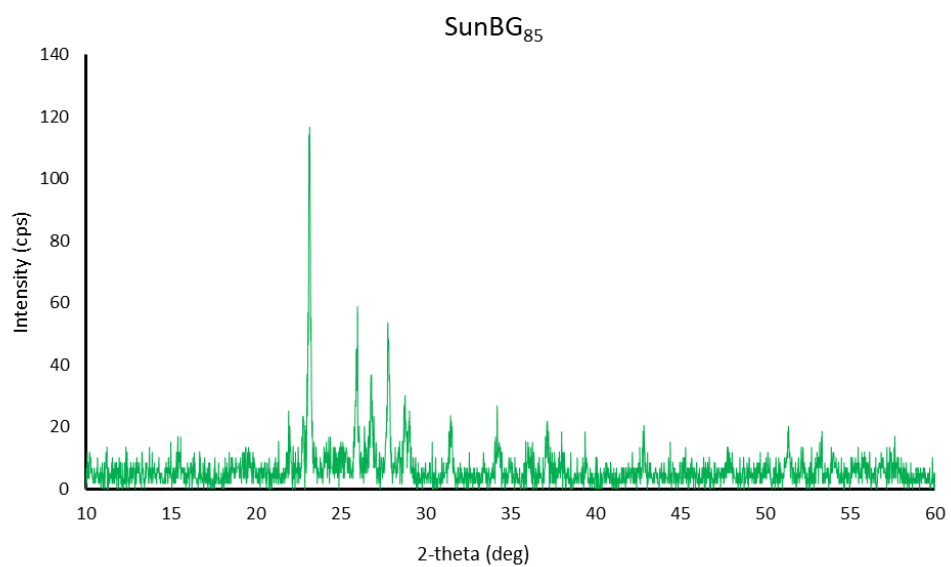
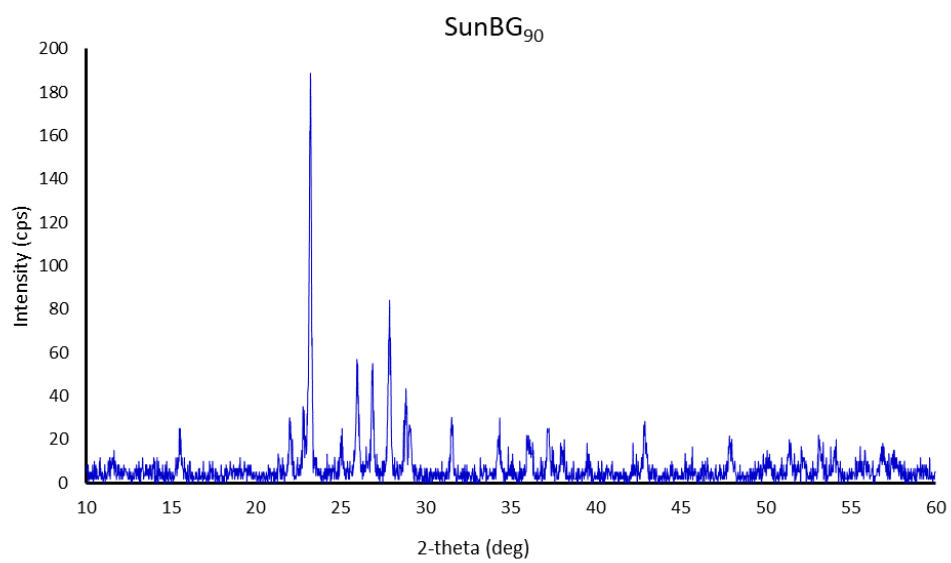


**Figure S6.** Fourier-transform infrared spectroscopy (FT-IR) traces for SunBG<sub>90</sub> and SunBG<sub>85</sub>.



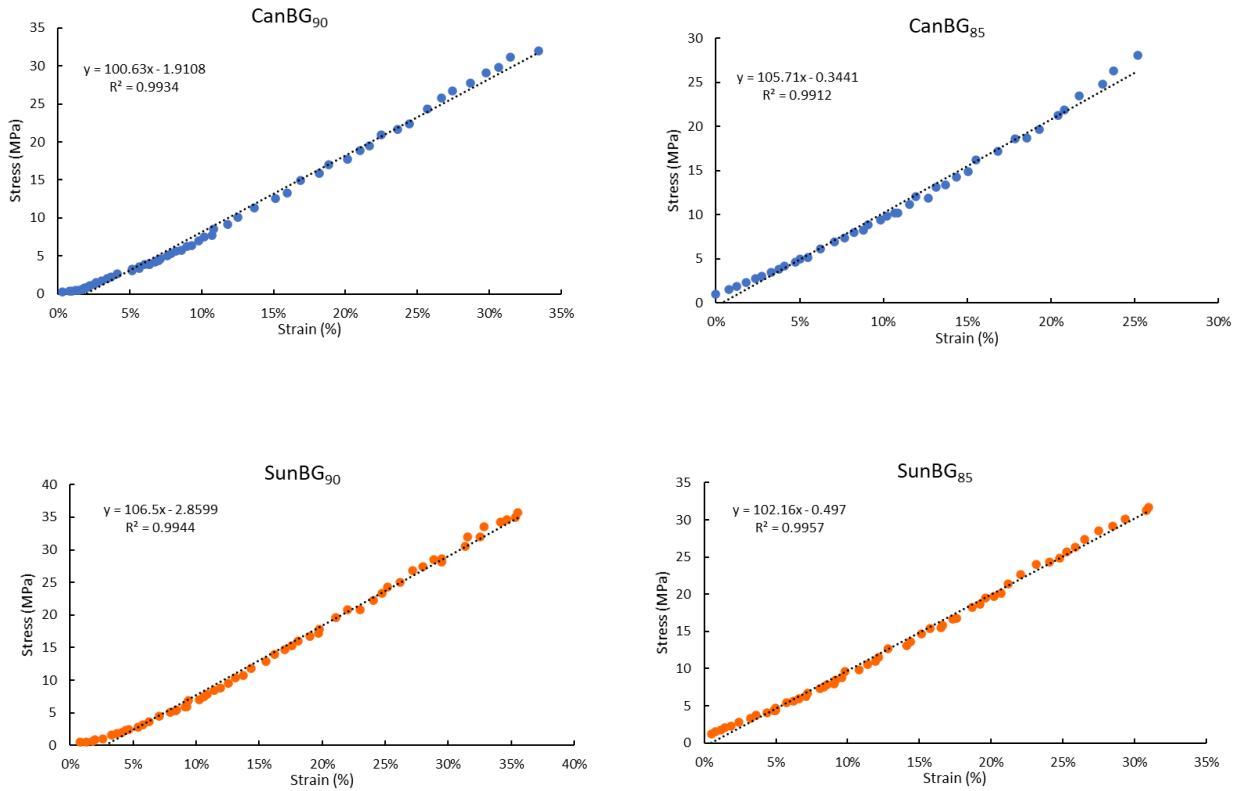
**Figure S7.** Powder-XRD traces for **CanBG<sub>90</sub>** and **CanBG<sub>85</sub>**.



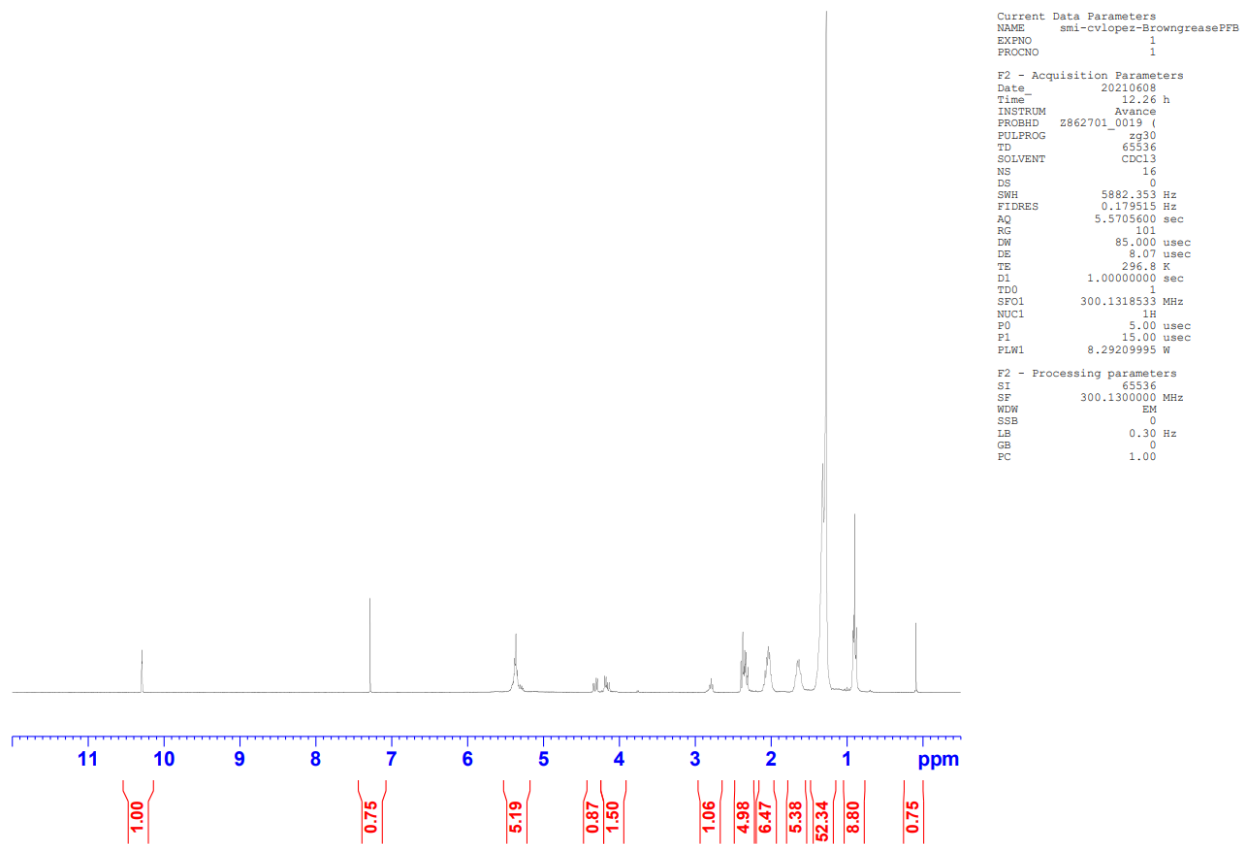


**Figure S8.** Powder-XRD traces for **SunBG<sub>90</sub>** and **SunBG<sub>85</sub>**.

## Stress vs Strain Plots



**Figure S9.** Stress-strain plots for measurements on the compression test cylinders. The blue and orange circles are data points, while the black dotted lines are the trendline for which the linear trendline equation and  $R^2$  values are provided in each plot.



**Figure S10.** Nuclear magnetic resonance (NMR) of brown grease using 2,3,4,5,6-Pentafluorobenzaldehyde (PFB) as internal standard.