

# **Synthesis of a Phosphorus-Based Epoxy Reactive Flame Retardant Analog to Diglycidyl Ether of Bisphenol A (DGEBA) and its Behavior as a Matrix in a Carbon Fiber Composite**

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## **Supplementary Information**

### **TGA results for neat P-DGEBA before and after drying process.**

The TGA results for each of the seven batches of pure P-DGEBA are shown below. The monomers were synthesized at different times and stored at ambient laboratory conditions for different periods of time. Because the samples were not stored in a desiccator, there was a chance a given sample could absorb water from the atmosphere. Figures S5-S6 show that the samples had different levels of absorbed moisture, ranging from approximately 0-5 wt% as quantified by the weight loss at 100 °C. It was also observed that the samples with the highest moisture content were clearly liquid rather than solid or semi-solid.

The drying process was carried out in a convection oven at 100°C for one hour in order to reduce the amount of residual solvent and moisture. Samples 5 & 7 had the highest total weight of P-DGEBA and demonstrated the highest initial weight loss. Figure S7 clearly shows that the initial peak in weight loss was eliminated, and the initial weight loss of 5% was reduced to 0.04 percent.

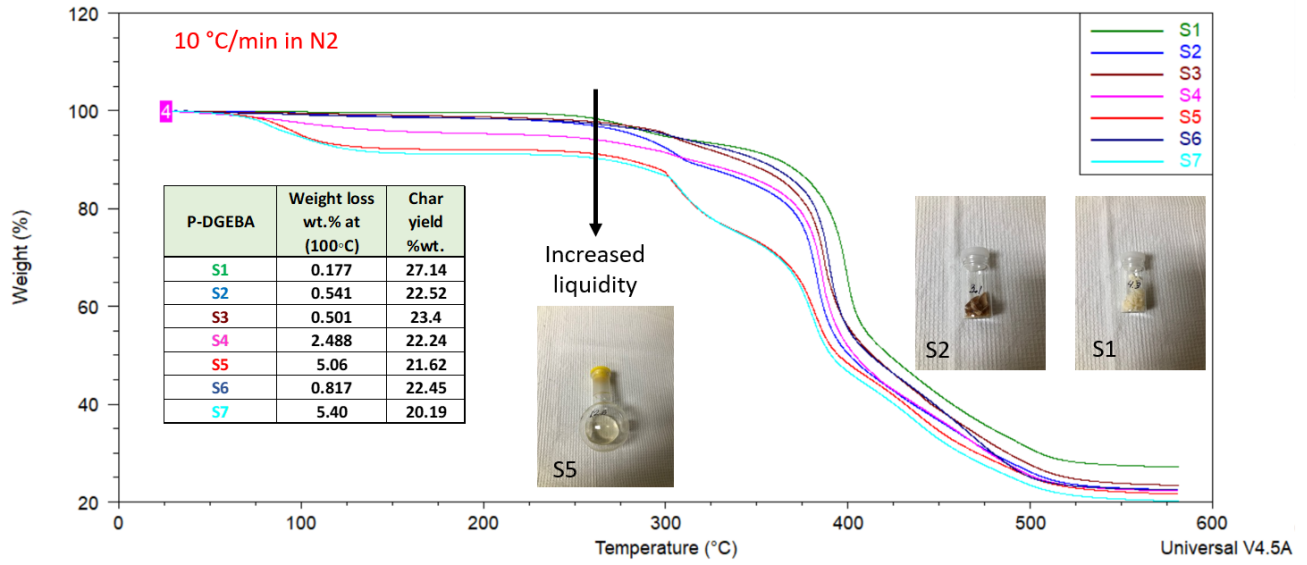


Figure S5: TGA results of neat P-DGEBA samples prior to drying.

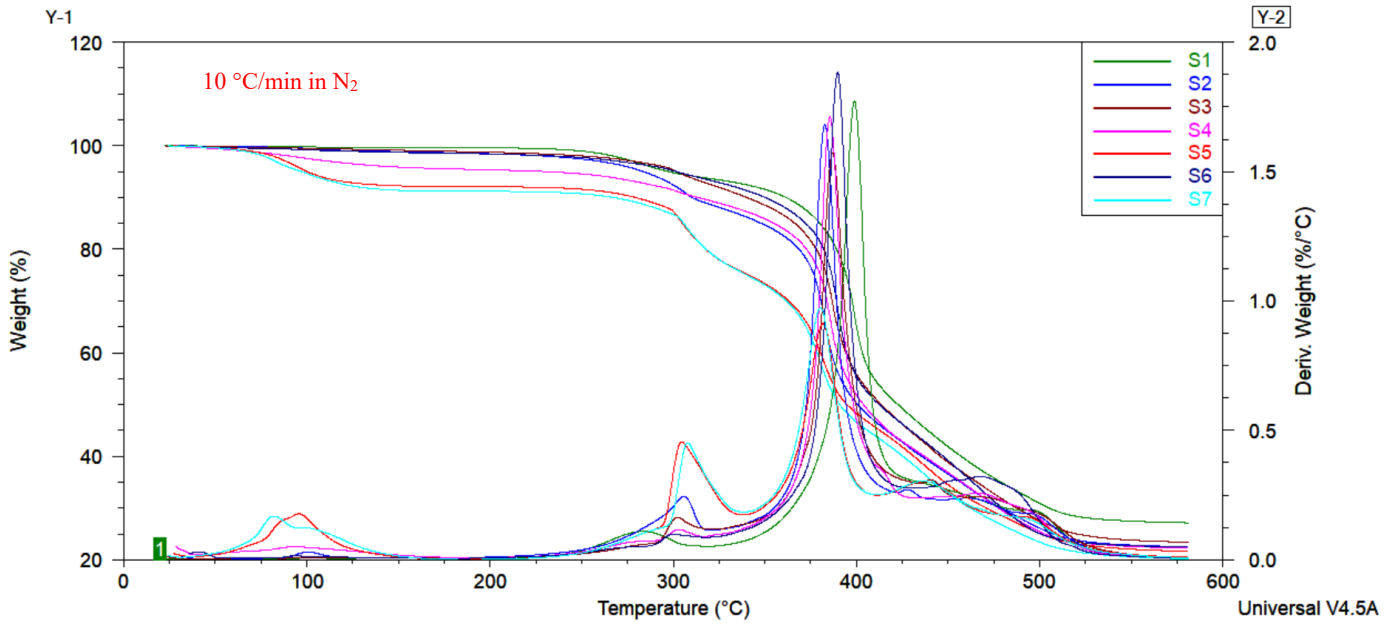
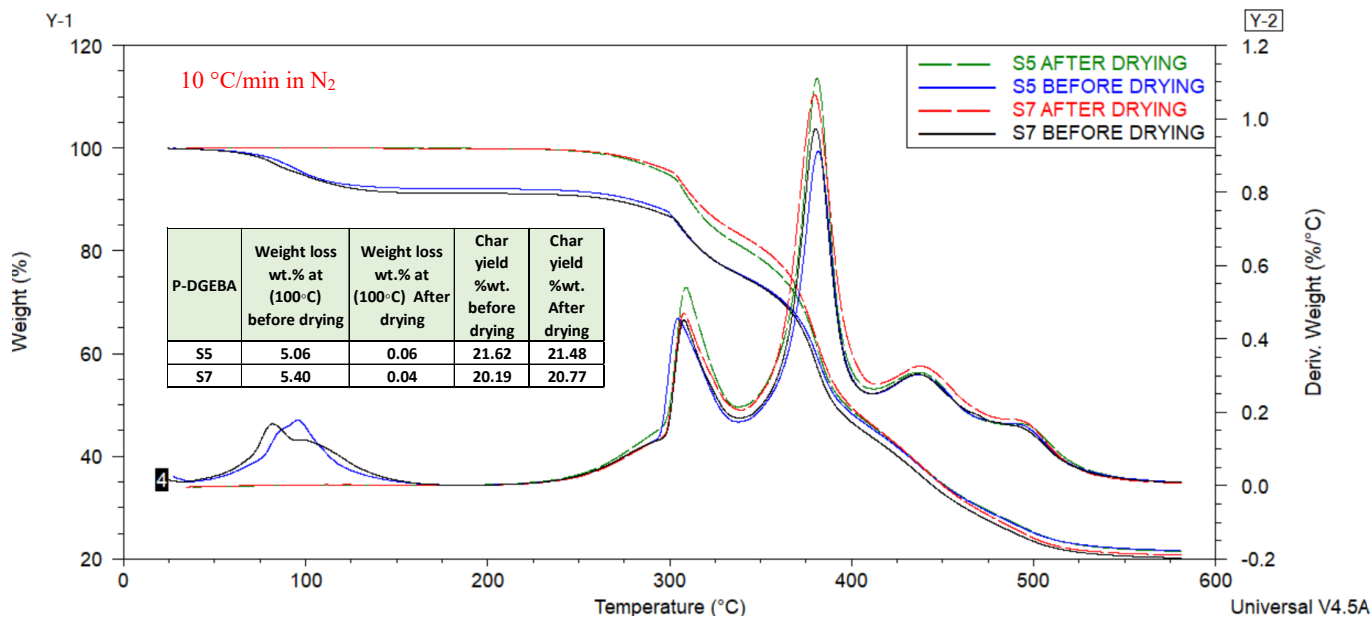


Figure S6: TGA results of neat P-DGEBA samples before drying process (derivative curves included in this figure as additional information).



**Figure S7:** TGA results of samples S5 and S7 before and after drying.