**Supporting Information**

**A Non-isothermal Curing Kinetic Studies of Novolac type Phenol-Formaldehyde resin for 3D Printing of Sustainable Building design**

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| **Compound** | **Source** | **Initial Purity** | **Purification Method** | **Final Purity** | **Purity Basic** | **Explanation** |
| Phenol crystals | VWR International | 99% | - | 99% | Mass | The compound was obtained from the supplier with an initial purity of 99% and used as such, with no further purification. |
| Formalin solution (37% formaldehyde in water) | VWR International | 37% | - | 37% | Mass | The compound was obtained from the supplier with an initial purity of 37% and used as such, with no further purification. |
| Acetone | VWR International | 99.5% | - | 99.5% | Mass | The compound was obtained from the supplier with an initial purity of 99.5% and used as such, with no further purification. |
| Oxalic acid (anhydrous crystal) | Spectrum Chemical Mfg. Corp | 98.0% | - | 98.0% | Mass | The compound was obtained from the supplier with an initial purity of 98.0% and used as such, with no further purification. |
| Bio-oil | Received from the Center for Renewable Carbon Laboratory, University of Tennessee | N/A | - | - | Mass | It is a mixture of compounds isolated from the organic phase of bio-oil, with 11.5 % of water. |

**Table S1: Compound Purity Information**



**Figures S1:** The reaction mechanism of bionovolac phenol-formaldehyde resin (BNPF)



**Figure S2** Resin characterization by FTIR (a) Novolac phenol-formaldehyde resin and, (d) biobased novolac phenol-formaldehyde resin [Adapted from our previous publication: Synthesis of Biobased Novolac Phenol–Formaldehyde Wood Adhesives from Biorefinery-Derived Lignocellulosic Biomass (2021) ACS Sustainable Chemistry & Engineering, 9 (33), 10990–11002.]



**Figure S3** Resin characterization by 1H NMR (a) Novolac phenol-formaldehyde resin and, (d) bionovolac phenol-formaldehyde resin [Adapted from our previous publication: Synthesis of Biobased Novolac Phenol–Formaldehyde Wood Adhesives from Biorefinery-Derived Lignocellulosic Biomass (2021) ACS Sustainable Chemistry & Engineering, 9 (33), 10990–11002.]