Text S1. Gaussian deconvolution procedure for DTG curves.

The Gaussian deconvolution was performed on the experimental DTG curve obtained at a heating rate of 7.5 K/min. The initial number of fitted peaks was determined based on the distinguishable DTG features together with the known thermal-decomposition characteristics of lignocellulosic biomass components reported in the literature. Accordingly, the overall DTG profile was initially separated into five Gaussian-type peaks. The first low-temperature peak below 150 °C was assigned to free water and was excluded from the subsequent kinetic discussion. The remaining four peaks were assigned to combined water, hemicellulose, cellulose, and lignin, respectively, according to the relative positions of the DTG shoulders/maxima and the typical decomposition intervals of these components.

During fitting, the initial peak positions were estimated individually for each sample from the experimental DTG profile, including the peak shapes and shoulder positions, together with literature-reported decomposition intervals of the major biomass components. The peak positions, widths, and amplitudes were then allowed to vary during the iterative Gaussian fitting procedure to achieve the best agreement with the experimental DTG curve. The goodness of fit was evaluated by the correlation coefficient (R^2), and all fitted curves showed R^2 values above 0.99.

After deconvolution, the component-resolved DTG curves were used to calculate the corresponding conversion behavior of each fitted component, and the resulting data were subsequently subjected to isoconversional kinetic analysis. In this way, the Gaussian fitting–isoconversional method enabled the apparent activation energies of the pseudo-components to be compared within their corresponding temperature intervals.