

## SUPPLEMENTARY MATERIAL:

### **Molecular Mobility of Amorphous N-Acetyl- $\alpha$ -Methylbenzylamine and Debye Relaxation evidenced by Dielectric Relaxation Spectroscopy and Molecular Dynamic Simulations**

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### **Fitting analysis of secondary relaxations detected in Nac-MBA**

Figure S1 shows illustrative examples ( $T = 203$  K and  $T = 232$  K) of the fitting procedure used for a semi-quantitative analysis of Nac-MBA dielectric spectra. For the  $\beta$ -relaxation,  $\alpha_{HN}$  slightly increases from 0.38 up to 0.45 as temperature increases from 222 K up to 240 K. For temperatures  $T > T_g$ , the  $\beta$ -process becomes broader and progressively get out of the investigated frequency range.

In the case of the secondary  $\gamma$ -process a value of  $\alpha_{HN} = 0.14 \pm 0.02$  is obtained. This value seems compatible with the broadness nature expressed by experimental features (see figure 6 and 8 of main text) and was kept constant in all the temperature region for which it was possible to follow the  $\gamma$ -trace in the available frequency region (from 153 K to 238 K).

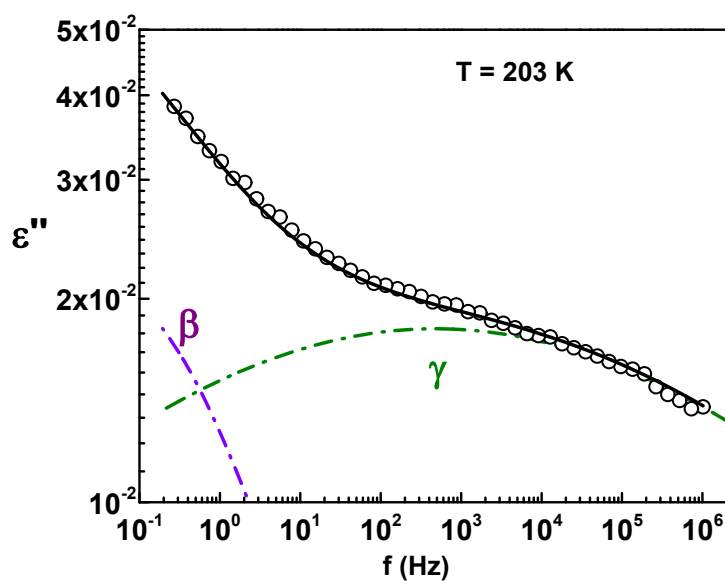
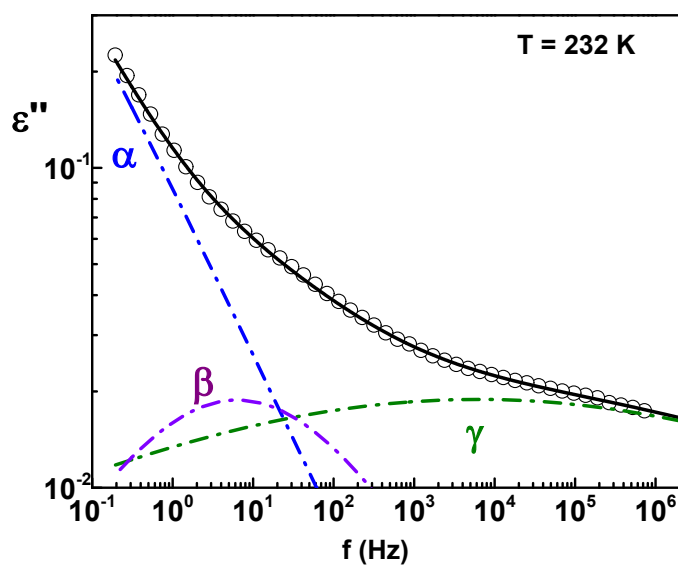


Figure S1: Fitting procedure of the dielectric loss peak in the glassy state at indicated temperatures (232 K and 203 K). The dash-dot lines represent the individual fitting functions (Cole-Cole for the secondary and  $\alpha$ -relaxation and Debye for the D-process). Solid lines are the total fit functions (see main text for details).