The Complex Amorphous Phase in Poly(butylene succinate-*ran*-butylene azelate) Isodimorphic Copolyesters

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Supporting Information

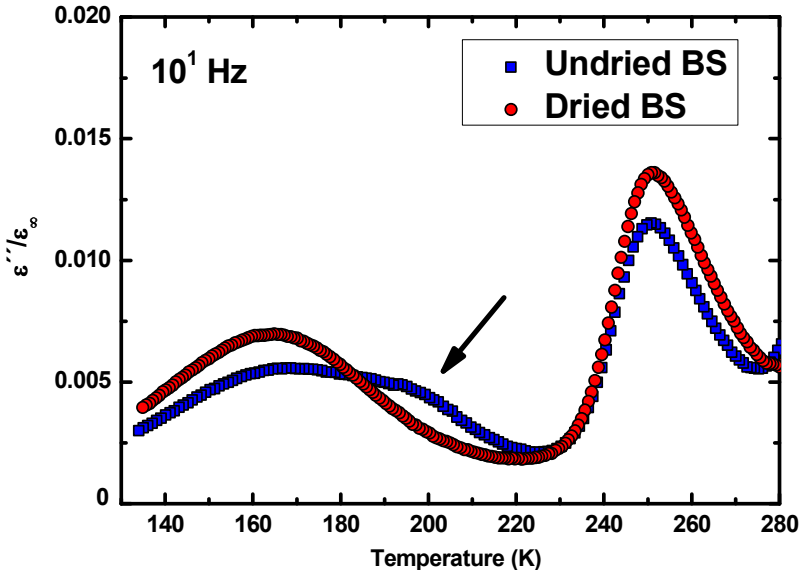

Figure S1. Isochronal plots of $\varepsilon''/\varepsilon_\infty$ for undried and dried BS homopolymer at 10^1 Hz.

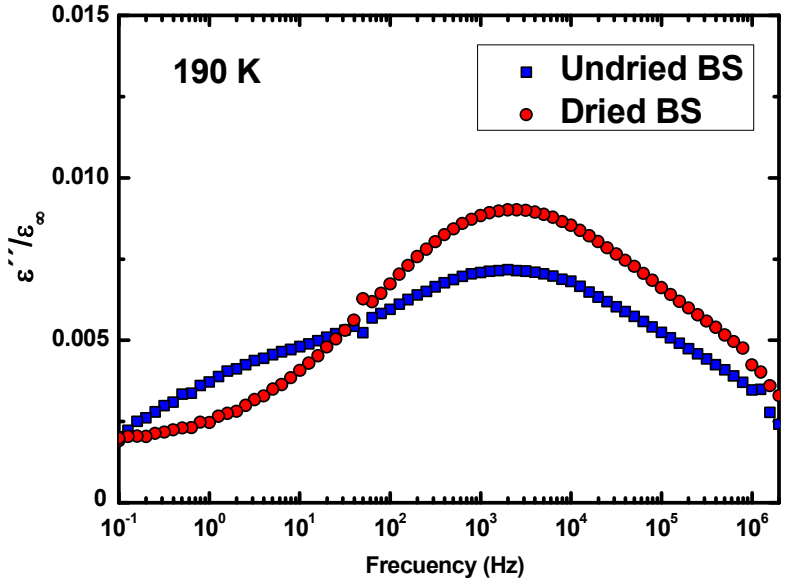

Figure S2. Dielectric loss spectra versus frequency of undried and dried BS homopolymer at 190 K.

Figure S1 and S2 present, respectively, isochronal and isothermal plots of permittivity losses on undried and high vacuum dried BS samples. In order to obtain the undried BS data, the measurements were carried out on a previously dried sample stored for

weeks in a desiccator and without having been subjected to any further drying protocol. After that measurement, the same sample was dried under high vacuum (10^{-5} Torr) overnight and the measurements were repeated. Both samples show a clear dielectric relaxation at low temperature, which is attributed to local dipole reorientation occurring in the glassy state. The dried sample presents a single peak, in agreement with what has been observed in similar homopolymers in literature[1] and in BAz in this work. Moreover, the β relaxation measured in dried BS is similar to that determined in amorphous BS by Charlon et al.[2] which is in line with the general finding that crystallization of polymers does not affect the secondary relaxation except in an amplitude factor.[3-6] However Charlon et al.[2] observed a double peak structure in the β relaxation of crystallized BS which looks very much the same determined by us in the undried BS. The above results clearly evidence that new relaxation mode at low-frequencies/high-temperature is not an intrinsic characteristic of PBS but would be most likely related to the uptake of water molecules. This finding is against the interpretation given by Charlon et al. in ref (2) where they concluded that the presence of this new relaxation peak is due to the same molecular arrangements of the β relaxation in fully amorphous BS but taking place in a more constrained amorphous environment. Already commented, this interpretation is against the general finding that crystallization of polymers does not affect the secondary relaxation except in an amplitude factor.[3-5]

References

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