Supporting information

Reducing the gap between the activation energy measured in the liquid and the glassy states by adding a plasticizer to polylactide

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Procedure to extract β_{KWW}

β_{KWW} is extracted from the fitting of the relaxation function (see Figure S1).
First the relaxation time distribution is given by:

$$f(\tau) = \frac{1}{\pi} \frac{\left(\frac{\tau}{\tau_{HN}}\right)^{\beta_{HN}\alpha_{HN}} \sin(\beta_{HN}\vartheta)}{\left[\left(\frac{\tau}{\tau_{HN}}\right)^{2\alpha_{HN}} + 2\left(\frac{\tau}{\tau_{HN}}\right)^{\alpha_{HN}} \cos(\pi\alpha_{HN}) + 1\right]^{\frac{\beta_{HN}}{2}}}$$

Where

$$\vartheta = Arc\ \tan\left(\frac{\sin(\pi\alpha_{HN})}{\left(\frac{\tau}{\tau_{HN}}\right)^{\alpha_{HN}} + \cos(\pi\alpha_{HN})}\right)$$ for the positive argument of arc tan.

$$\vartheta = Arc\ \tan\left(\frac{\sin(\pi\alpha_{HN})}{\left(\frac{\tau}{\tau_{HN}}\right)^{\alpha_{HN}} + \cos(\pi\alpha_{HN})}\right) + \pi$$ for the negative argument of arc tan.

Then the relaxation function is obtained from the integration of the function of relaxation times distribution according to:

$$\varphi(t) = \int_0^\infty f(\tau) e^{-\frac{t}{\tau}} d\tau$$

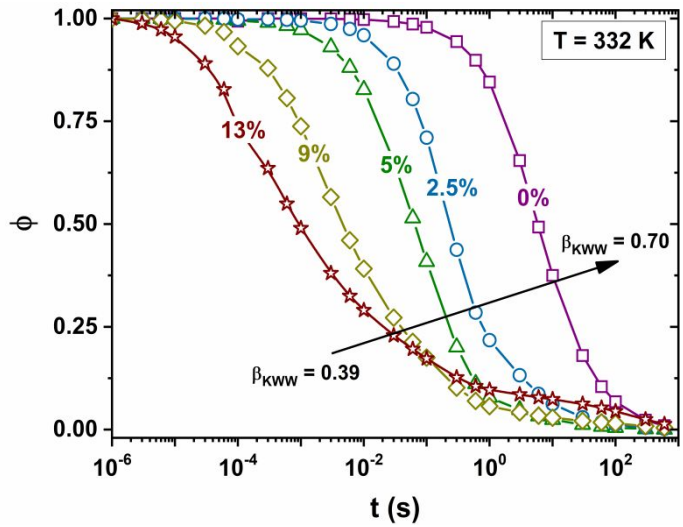

Figure S1: Function of relaxation for neat and plasticized polylactides

The data have been fitted with the Kohlrausch-Williams-Watts equation:

$$\phi_\beta(t) = \exp[-(t/\tau)^\beta]$$

With β being β_{KWW}

TSDC results with varying the polarization temperature

The temperature of polarization was chosen to both observe the global response of the material (well-resolved peak) and also to get rid of parasite signatures that become more prominent with the increase of plasticizer content. As shown in Figure S2, several polarization temperatures have been tested for each material and the one for which an acceptable compromise was found has been chosen.

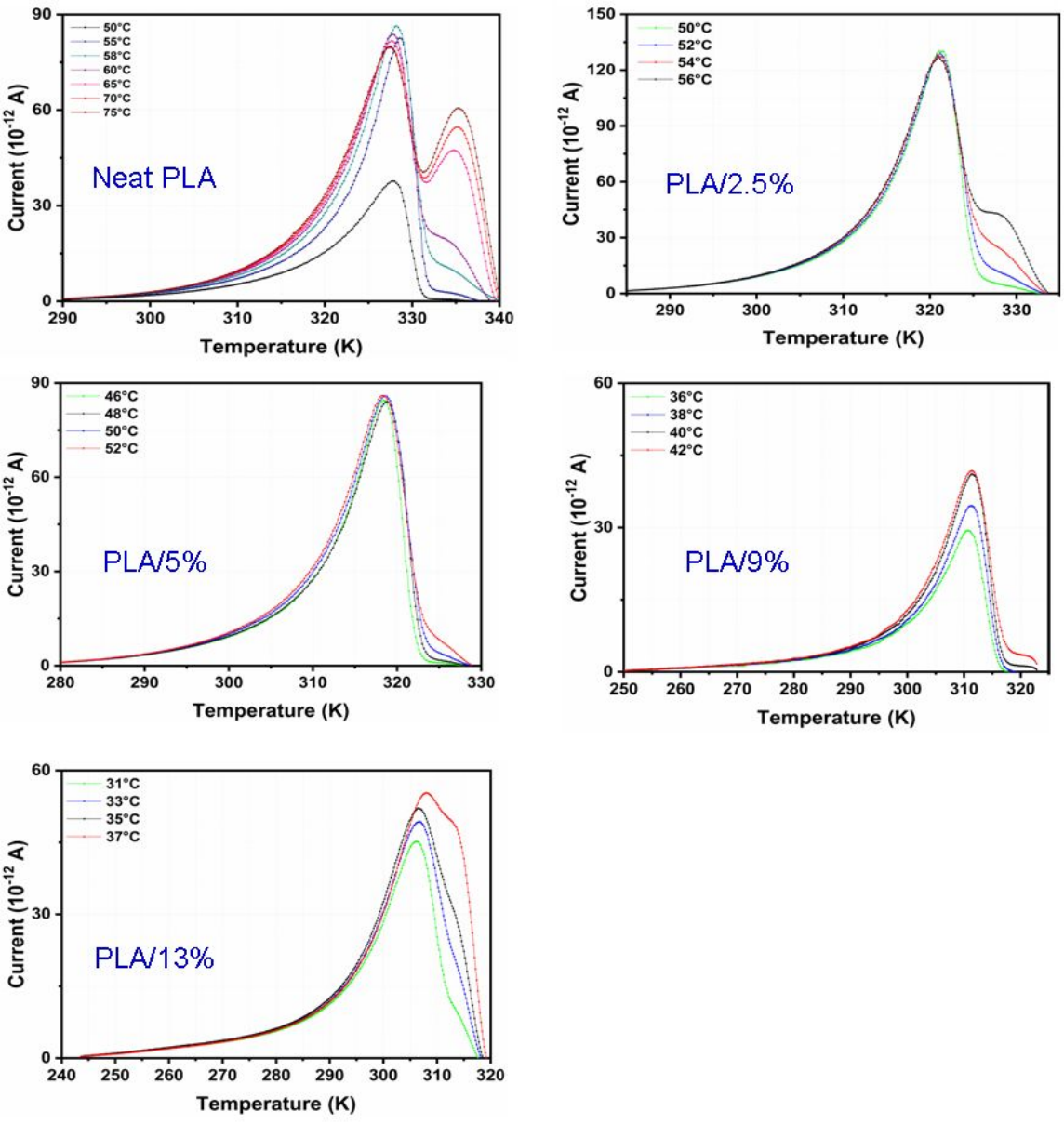

Figure S2: Recorded depolarization current as a function of temperature for several polarization temperatures.