

Calculation of the Activation Energy for Self Diffusion and Molecular Healing in PLA Films

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Bonding semicrystalline polylactic acid (PLA) films has been carried out in a broad range of temperatures and contact times above the glass transition temperature range in a lap shear joint geometry using a impulse welding system. It was observed that strength develops linearly with the fourth root of welding time until the interface strength becomes indistinguishable from the bulk material strength. The strength of the lap shear was measured in order to calculate the activation energy for molecular healing or self diffusion that creates a sufficiently strong bond of the interfaces.