Crystallization kinetics of neat PHBV and composites
PHBV/kenaf

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Poly(hydroxybutyrate-co-hydroxyvalerate) (PHBV) is a thermostable aliphatic polyester.PHBV is potentially useful in biomedical materials, and it is an attractive route to environmental waste management and can replace conventional polymers when recovery for recycling or incineration is difficult or not cost-effective.PHBV has a comparatively low crystallization primary nucleation density, and secondary crystallization of the amorphous phase can take place at the ambient temperature during storage. The solidification process tightly constrains the incineration is difficulty or not cost-effective. PHBV has a comparatively low crystallization primary nucleation density, and secondary crystallization of the amorphous phase can take place at the ambient temperature during storage. The solidification process tightly constrains the incineration is difficulty or not cost-effective.

Materials: four kind PHBV/kenaf composites:
- two with CA:
  - PHBV/kenaf/CA: 70/20/5 \[%\]
  - PHBV/kenaf/CA: 75/20/5 \[%\]
- two without CA:
  - PHBV/kenaf: 70/30 \[%\]
  - PHBV/kenaf: 80/20 \[%\]

Results

Conclusions

Degree of crystallinity does not depend on the kenaf content. The data for crystallization parameters are well comparable with these obtained from the melting kinetics of the second melting. These values of third peak are influenced of the glass temperature. Because of the high degree of crystallinity and slow crystallization rate, large spherulites form easily, with circular breaks around the center and cracks in the radial direction of the spherulites. The molecular structure of PHBV is on scheme 1.KENAF is natural fiber, which origins from the plant Hibiscus cannabinus.

References: