Biobased Composite Materials for Structural Applications

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Motivation for the Study

Biobased composite materials manufactured from agricultural-based products are attractive from an ecological, agricultural, and governmental perspective because of their renewability, biodegradability, and potential economic impact.
The Role of Biobased Composites

- Lighter weight
- Good specific strength and stiffness properties
- Better insulation and sound absorption properties
- Reduction in VOC & HAP emissions
- Better degradation when service-life is exhausted
- Reduction in the dependence on petroleum based products

Candidate Materials in ND
Polymers: Canola, Corn, Soybean, Flaxseed, etc.
Fibers: Flax, Corn, Sunflower, Sugar Beat, Switch Grass, etc.
A multidisciplinary team is being assembled at NDSU focused on improving the growth, harvesting, treatments, and development of new agri-based precursors for processing structural biobased composites in local and regional composite manufacturing facilities for use in a wide range of applications.
A successful biobased composite application was developed for John Deere farm implements between the University of Delaware (ACRES), Ashland Chemical Co., and John Deere Co.

Mercedes-Benz C and A-Class use flax/PE biobased composite underbody panels, engine and transmission covers.