

## Functionalized Cellulose Nanocrystal Materials and Methods of Preparation

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**Categories:**

- Materials and Manufacturing

**Keywords:**

- Green Technology
- Materials and Manufacturing
- Nanocrystals

Cellulose nanocrystals (CNCs) have been studied since the 1970s with several different applications at this point in time. This material has the ability to form a dense network and support certain materials, which can lead to versatile and eco-friendly polymer composites. While this property has been exploited in other areas, its incompatibility with specific host materials limits its use as a reinforcing agent for thermoplastic composite applications. While there are solutions to this problem, the techniques used require toxic ingredients and are complex in nature.

Researchers at Purdue University have developed a method to make CNCs viable for use in thermoplastic composites that is safer and more economical. By using more organic ingredients, including lactic acid, fatty acids, biodiesel, and plant oils, a functionalized version of CNCs were made with safer inputs. This process recycles used lactic acid, lowering its environmental footprint and improving the economic efficiency of this method.

**Advantages:**

- Safer ingredients
- Smaller environmental inputs
- More economical

**Potential Applications:**

- Acrylics production
- Thermoplastic composites

**People:**

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**Intellectual Property:**

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