

The Global Market for Cellulose Nanocrystals (CNC)

<https://marketpublishers.com/r/G1862BC7AD48EN.html>

Date: November 2019

Pages: 71

Price: US\$ 525.00 (Single User License)

ID: G1862BC7AD48EN

Abstracts

By treating cellulose with concentrated acids known as acid hydrolysis, the amorphous regions can be broken up, thereby producing nano-sized cellulose-based crystals called nanocrystalline cellulose (NCC) or cellulose nanocrystals (CNC).

Cellulose nanocrystals are elongated, rigid and rod-like or whisker-shaped particles with a rectangular cross-section. These materials can be prepared from any cellulose source materials including wood pulp, recycled paper and paperboard, cotton fibres, hemp, flax, bamboo, sugarcane bagasse and other agro-biomass.

CNC that are derived from wood pulp and have dimensions of approximately 5 nanometers (nm) in diameter and 150-200 nanometers in length. Larger crystals can be produced using cotton (10 nm by 500 nm) or algae (20 nm by 1000nm). CNCs possess many desirable properties such as high surface area, hydroxyl groups for functionalization, colloidal stability, low toxicity, chirality and mechanical strength.

Applications for Cellulose nanocrystals include:

Biodegradable and renewable nanocomposites.

Packaging.

Flexible packaging.

Optical films.

Coatings for flexible packaging.

Nanocomposite films with good transparency and thermal stability.

Iridescent films in textile and security industries.

Biobased and biodegradable barrier coating on food packaging.

Conductive inks.

Biodegradable Flexible electronics-fully recyclable flexible paper electronic devices.

Piezoelectric sensors.

Flexible sensors.

Mesoporous films and membranes.

Water filters.

Biocomposites for bone replacement and tooth repair.

Drug delivery.

Protein immobilisation.

Wound dressings.

Flexible batteries.

Nanofluid in enhanced oil recovery.

Drilling fluids.

Food additives.

Adhesives.

Catalysts.

Cosmetics.

Hydrogels.

Viscosity modifiers and flow aids.

Report contents include:

In-depth analysis of the global market for cellulose nanocrystal (CNC) products, applications, producers, product developers and products

Global cellulose nanocrystal production capacities.

In-depth market assessment of opportunities for cellulose nanocrystals.

Tonnage demand for end user markets for cellulose nanocrystals, 2018-2030.

In-depth company profiles, including products, capacities, production processes, target markets and commercial activities.

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