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3D Printing Using Plant-derived Cellulose and Its Derivatives: A Review

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Highlights

- Up-to-date usage of cellulose and its derivatives for 3D printing.
- Summary of different functions of cellulose and its derivatives in 3D printing.
- The shear-thinning feature imparts cellulose/its derivatives with good printability.
- Water-soluble/water-dispersible cellulose derivatives preferred for 3D printing.
- Various examples of cellulose/its derivatives in 3D printing discussed.

Abstract. Three-dimensional (3D) printing is classified as a revolutionary, disruptive manufacturing technology. Cellulose (the most abundant natural polymer) and its many derivatives have been widely studied for many applications. The combination of 3D printing with cellulose-based feedstocks is therefore of critical interest. This review highlights many studies on 3D printing applications of plant-derived cellulose and its derivatives. Potential materials include cellulose ethers/esters, microcrystalline cellulose, nanocellulosic materials, and other products. It focuses on their roles and functions in 3D printing processes and the

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