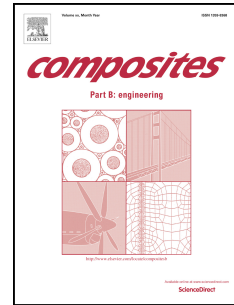


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Preparation and characterization of starch-based composite films reinforced by polysaccharide-based crystals

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# 1 Preparation and Characterization of Starch-based Composite 2 Films Reinforced by Polysaccharide-based Crystals

3  
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## 12 13 **Abstract:**

14 Starch based films, reinforced by two types of polysaccharide-based crystals, were  
15 prepared and compared. The films were transparent and their surface was smooth in  
16 appearance. Addition of crystals increased the Young's modulus and tensile strength of  
17 starch-based materials and decreased elongation at break. Scanning electron  
18 microscopic observation indicated good compatibility between starch matrix and the  
19 reinforcing fillers due to same chemical unit (glucose). Cellulose crystals have higher  
20 thermal stability than that of starch crystals; this provides better processibility and  
21 superior mechanical properties to starch films filled with cellulose crystals. On the other  
22 hand, starch films filled with starch crystals demonstrated higher protection against UV  
23 radiation. Since all the components used in this work belong to food sources, the  
24 prepared films are biodegradable, safe for food packaging and can also be used to

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