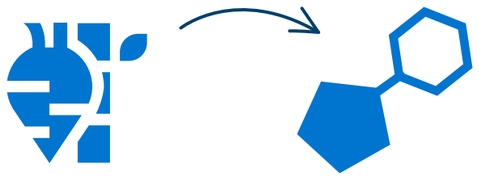
HOW IT WORKS

IFF's new family of advanced engineered biomaterials is created from the enzymatic polymerization of sucrose. They constitute a range of materials with glycosidic linkage control, designed-in molecular weights and molecular weight distribution, as well as the capability to control the inherent material morphology.

1 A sustainable, fungible feedstock

In the bio-revolution, plant-based sugars can replace fossil feedstocks. Sustainable feedstocks from agricultural crops such as sugar beet or sustainably-farmed sugar cane are converted in biorefineries into products serving the food, feed, material and energy markets.



Sugar beet/cane

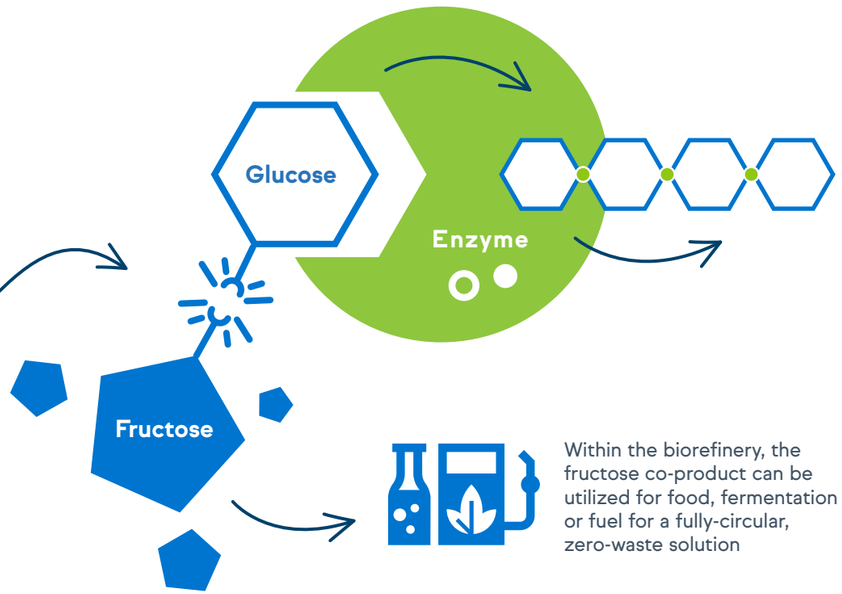
Sucrose
Fructose + glucose

DESIGNED ENZYMATIC BIOMATERIALS

2 Enzymatic polymerization

The designed enzymes are used to catalyze the conversion of sucrose to form the poly-glucose material (polysaccharide).

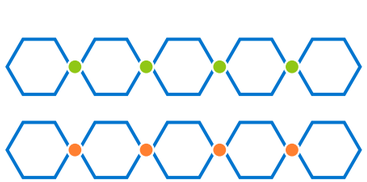
Enzymatic polymerization works at ambient temperature & pressure conditions to convert aqueous solutions of plant-sugar into the polysaccharide, which is then separated using conventional processes



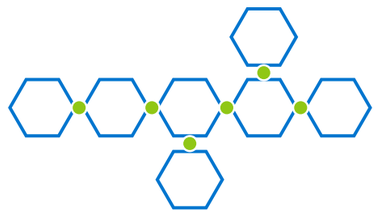
Within the biorefinery, the fructose co-product can be utilized for food, fermentation or fuel for a fully-circular, zero-waste solution

3 Polysaccharides with highly tailored properties

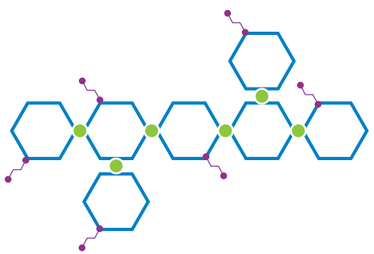
The enzymatic polymerization process allows for precise control of the way glucose molecules are linked, leading to a consistent, high-quality biomaterial with customizable properties. This enables access to a wide range of polymer length, material morphologies and control in further functionalization.

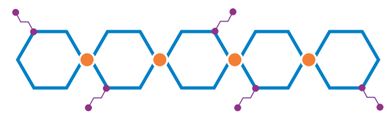


Customized linkages



Branching





Derivatization