

Squeezing more than just orange juice: Citrus peel valorisation

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Food waste is a misnomer as we know food should not be wasted especially as close to 1 billion people are severely malnourished. Globally, 1.3 billion tons is wasted annually either due poor storage post-harvest (typically in emerging countries) or for aesthetic reasons (typically in developed countries). If food waste was a mythical country then it would be the third largest emitter of CO₂ just behind the USA and China but ahead of India.

Approximately, 30-35% of food grown is lost from farm to fork (table) as a result of primary (harvesting residues) and secondary processing (peeling, chopping, slicing etc). This constitutes unavoidable food supply chain wastes which from a chemists' point of view are a treasure trove of biobased chemicals and materials designed by nature. In fact, unavoidable food supply chain wastes may be considered as Nature's Renewable Periodic Table of Structure, Form and Function.

This talk will contextualise global megatrends, sustainability and give an example of a waste orange peel biorefinery that yields essential oils, pectin and microfibrillated cellulose via benign technologies. By weight, the latter is the main constituent of orange peel that forms hydrogels with potential applications in food and healthcare as rheology modifier. Unavoidable food supply chain wastes is a resource worth re-sourcing.