

Nanocomposites of Clay for Food and Agriculture Applications

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Abstract

Nanotechnology is widely accepted as a transformative technology capable of providing unprecedented solutions for global challenges in food safety and security. Ability to respond to unique constraints of Agri-Food industry operating under constraints of low profit margin, regulatory oversight and strong societal perceptions determines the success and sustainability of nanotechnology in this sector. Greener methods of nanomaterials synthesis and/or identifying low-cost nanomaterials (preferably of natural chemistry) with scale-up capabilities along with understanding and responding to societal concerns on nanomaterials applications in food are warranted for sustainability of nanotechnology. In this regard, composite materials developed using nano-clays are ideal for food and agriculture application. Halloysite nanotube based composite material was developed and tested for their applications in infection control, food packaging and improving plant protection and productivity. Similarly, composite materials of layered double hydroxide showed promising properties for their application as white colorant. Using these examples, I will elaborate a general framework for developing sustainable nanomaterials for food and agriculture applications