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Sommario/riassunto

Because of the increasing pressure on both food safety and packaging/food waste, the topic is important both for academics, applied research, industry and also for environment protection. Different materials, such as glass, metals, paper and paperboards, and non-degradable and degradable polymers, with versatile properties, are attractive for potential uses in food packaging. Food packaging is the largest area of application within the food sector. Only the nanotechnology-enabled products in the food sector account for ~50% of the market value, with and the annual growth rate is 11.65%. Technological developments are also of great interest. In the food sector, nanotechnology is involved in packaging materials with extremely high gas barriers, antimicrobial properties, and also in nanoencapsulants for the delivery of nutrients, flavors, or aromas, antimicrobial, and antioxidant compounds. Applications of materials, including nanomaterials in packaging and food safety, are in forms of: edible films, polymer nanocomposites, as high barrier packaging materials, nanocoatings, surface biocides, silver nanoparticles as potent antimicrobial agents, nutrition and neutraceuticals, active/bioactive packaging, intelligent packaging, nanosensors and nanomaterial-based assays for the detection of food relevant analytes (gasses, small organic molecules and food-borne pathogens) and bioplastics.