

Plasma Engineered Anti-Oxidant Surfaces as Novel Food Packaging Material

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Abstract

The process of food oxidation, especially of lipids, is initiated amongst others by free radicals. It is rather slow in the beginning, the concentration of hydroperoxides and other oxidation products increases gradually, leading to an exponential increase in the rate of oxidation process. This initial period is called the induction period, in which food keeps its sensory quality (aroma, flavor, appearance and texture). To prevent food from spoiling, different techniques have been developed. Traditionally, food was dried, salted, heated, cooled, frozen, smoked, acidulated, fermented and/or airtight sealed. All these methods are still in use, although cooling and freezing gained popularity and by now are used in nearly every household in the western world by refrigerators and freezers. Antioxidants are oxidation inhibitors that can play a significant role in keeping the degradation of food in the induction period. In this project, various antioxidant molecules/functionalities were grafted to the surfaces of food packaging material and their effect in delaying food oxidation was investigated. The results of our investigation will be discussed.

Keywords

Food Spoilage, Packaging, Antioxidant, Surface grafting, Plasma

Biography

Dominic Flaig is an Undergraduate at Reutlingen University in Germany majoring in applied Chemistry. He conducted his undergraduate thesis under the supervision of Dr. Ali Zand at Kettering University, Flint, Michigan.

Ali R. Zand is a Professor of Chemistry at Kettering University. His research interests include Material Science, Polymers, photochemistry and Organic synthesis.