

Oxygen-Dependent Degradation and Gas Transport in Polymers: Old Stories and New Applications

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Molecular oxygen plays important roles in a variety of processes involving organic polymers. It is key in events that result in polymer degradation. Indeed, to supplement the action of antioxidants added to a given polymer to inhibit degradation, other specially developed polymers are sometimes used as protective barriers to exclude atmospheric oxygen (e.g., packaging). These barrier polymers are also often used to protect other organic materials (e.g., food). In this lecture, I will discuss some of our old work on monitoring, quantifying and controlling these phenomena. I will then carry some of the basic principles forward in time, discussing examples from our recent work on biologically relevant macromolecules (e.g., lipids, proteins).