Polymer Based Biosensors for Medical Applications

The objective of this chapter is to give an overview about the newest developments in biosensors made of polymers for medical applications. Biosensors are devices that can recognize and detect a target with high selectivity. They are widely used in many fields such as medical diagnostic, environmental monitoring and food safety. The detected element varies from a single molecule (such as glucose), a biopolymer (such as DNA or a protein) to a whole organism (such as bacteria). Due to their easy use and possible miniaturization, biosensors have a high potential to come out of the lab and be available for use by everybody. To fulfill these purposes, polymers represent very appropriate materials. Many nano- and microfabrication methods for polymers are available, allowing a fast and cheap production of devices. This chapter will present the general concept of a biosensor in a first part. The second part will focus on conducting polymers, used as electrode material in devices based on electrochemical detection. A third part will describe the molecularly imprinted technology, where the target is replicated in 3D negative form into the polymer.

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