



International Journal of Polymer Science

Special Issue on

**Biodegradable Polymers for Medical Applications**

# CALL FOR PAPERS

Modern medicine would be impossible without the application of various natural or artificial materials. Among them, polymers, both natural and synthetic, play a key role. The purpose of some of them is to stay in the body forever, but others are only intended for temporary use, and, historically, these had to be removed or excreted from the body. This step can now be avoided if biodegradable materials are used; after they have served their purpose, they break down and are absorbed by the body.

In medicine, biodegradable polymers offer great potential for controlled drug delivery and wound management (e.g., adhesives, sutures, and surgical meshes), for orthopaedic devices (screws, pins, and rods), and for dental applications (filler after a tooth extraction) and tissue engineering, just to name the most important.

The application of biodegradable synthetic polymers started several decades ago, and since then it has been the focus of much research. This is because the requirements are quite complex: the polymer must be biocompatible, not to evoke an inflammatory response, and must have suitable mechanical and processing characteristics. Furthermore, the degradation products cannot be harmful and must be readily resorbed or excreted. For these reasons, it is important to test each material adequately before use in the human body, not only *in vitro* but also *in vivo*.

Since the requirements are variable, there is no ideal polymer for use in medicine. Currently, new materials are being developed which should possess desired properties for highly specific purposes, because the existing materials are not good enough from the viewpoint of physical, biochemical, or degradation properties. Because new challenges continue to appear, the development of novel biomaterials remains a popular topic. Moreover, beside materials, processing techniques are also developed, very often thanks to computer exploitation.

Aside from the advantages of biodegradable polymers used in medicine, such as easier physiological and less invasive repair or the possibility of tissue growth, problematic issues remain. The products of degradation (monomers, additives) can be toxic, sterilization might be difficult, and so forth.

For this special issue, researchers are invited to submit original research papers with the purpose of making breakthrough findings accessible to a relevant audience. Also welcome are review articles summarizing the very latest developments in the area.

Potential topics include, but are not limited to:

- ▶ Production of synthetic polymers for medical applications
- ▶ Tailoring the properties of polymers used in medicine
- ▶ Surface modification of medical polymers
- ▶ Novel approaches to the characterization and assessment of medical polymers
- ▶ Mechanical and chemical properties of materials used in medicine
- ▶ Potential of nanoparticles for medical polymers
- ▶ Biodegradability assessment
- ▶ Manufacturing properties of polymers for medical applications
- ▶ Decomposition and degradation properties of medical polymers (*in vitro* and *in vivo* tests)

Authors can submit their manuscripts via the Manuscript Tracking System at <http://mts.hindawi.com/submit/journals/ijps/bpma/>.

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