

Antimicrobial Polymers: from Structure Design to Specific Properties and Applications

Madalina ZANOAGA, Fulga TANASA

“Petru Poni” Institute of Macromolecular Chemistry Iasi, Romania
zanoaga@icmpp.ro

Abstract – Microbial infection remains one of the most serious complications in several areas, particularly in medical devices, drugs, health care and hygienic applications, water purification systems, hospital and dental surgery equipment, textiles, food packaging, and food storage [1,2]. Antimicrobials gain interest due to their potential to provide quality and safety benefits to many materials. However, low molecular weight antimicrobial agents suffer from many disadvantages, such as toxicity to the environment and short-term antimicrobial ability.

To overcome these problems associated with the low molecular weight antimicrobial agents, antimicrobial functional groups can be introduced into polymeric macromolecules. The use of antimicrobial polymers offers promise for enhancing the efficacy of some existing antimicrobial agents and minimizing the environmental problems accompanying conventional antimicrobial agents by reducing the residual toxicity of the agents, increasing their efficiency and selectivity and prolonging the lifetime. Research concerning the development of antimicrobial polymers represents a great challenge for both the academic world and industry.

This article reviews some data concerning antimicrobial polymers, from the structure design to specific properties and applications, as well as future and perspectives in the field of antimicrobial polymers.

Index Terms – antimicrobial agents, polymers synthesis, characterization, applications.

REFERENCES

- [1] M. B. Patel, S. A. Patel, A. Ray and R. M. Patel, J. Appl. Polym. Sci., 89, 895-900, 2003.
- [2] E.-S. Park, H.-J. Lee, H.-Y. Park, M.-N. Kim, K.-H. Chung and J.-S. Yoon, J. Appl. Polym. Sci., 80, 728-736, 2001.