In the frames of the bilateral agreement BAS – Romanian Academy of Sciences: “Novel complex polymer systems based on ionic synthetic and natural polymers”

**Duration:** 2006 – 2009

**Key words:** polyelectrolyte complexes, chitosan, food coating, ionic polysaccharides

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The knowledge on the interactions between natural polyelectrolytes is of primary importance for understanding the biological systems, e.g. DNA, cellular proteins and polysaccharides, viruses and bacteria. In the last few years natural polyelectrolytes such as chitosan, alginates, etc. have attracted much interest as food additives or as component part of new generation of food packaging. Food coating using natural polyelectrolytes may help to avoid some of the shortcomings of the conventional plastics based on synthetic polymers such as presence of toxic monomers residuals and environment pollution due to very low rate of degradation. An important advantage of these polymers is that they are obtained from renewable sources. Besides, some of the natural polyelectrolytes may serve for preparation of edible food coating. Chitosan is particularly well suited for this purpose since it is biocompatible and biodegradable, and, moreover, it has an inherent antibacterial activity. However, finding the formation conditions of PECs based on chitosan and other natural polyelectrolytes and tailoring the PECs properties is still a challenge. Therefore, the present project is focused on studying the formation of PECs based on chitosan and other natural polyelectrolytes targeted for use as food coatings. The possibilities for creating new biodegradable and biocompatible polymer materials (mono- or bilayer films or gels) from natural polysaccharides or their derivatives will be studied.