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Multilayered edible coatings from chitosan and sodium caseinate by layer-by-layer assembly

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The demand towards the consumption of minimally processed fresh fruits and vegetables is increasing contemporarily, owing to the fast-paced lifestyle of our age and the change of direction in eating habits. Accordingly, the studies devoted to the maintenance of shelf stability of such products have accelerated. The studies show that the modified atmosphere packaging (MAP) alone is not sufficient to preserve the freshness of fresh-cut fruits and vegetables and the edible films and coatings which are used as supportive agents to MAP might lead to some undesirable sensory effects on the products. Fabrication of ultra thin but still functional, edible coatings might be an alternative for the minimization of such effects. The Layer-by-Layer (LbL) Deposition, a 'bottom-up' nano-fabrication technique which is based on the successive adsorption of two or more materials onto each other due to the physicochemical interactions in between is a promising method to fabricate such coatings as it provides high control on the thickness and morphology. In this study, multilayer formation from chitosan and sodium caseinate will be investigated. The effects of pH of the dipping solutions, adsorption time and number of layers on the multilayer growth and the structure of the coatings will be investigated. Multilayer build-up will be monitored by UV-Vis spectroscopy and Surface Plasmon Spectroscopy (SPR) which allows for *in situ* observation of the multilayer formation. The thickness of the layers will be determined by SPR and Atomic Force Microscopy (AFM). AFM will also give information about the surface morphology of the coatings.

Biography

Beste Bayramoglu has earned her PhD degree from University of California, Davis and Department of Chemical Engineering & Materials Science. She has been working as an Assistant Professor in the Department of Food Engineering at Izmir Institute of Technology since June 2013.

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