ΠΑΝΕΠΙΣΤΗΜΙΟ ΚΡΗΤΗΣ
ΤΜΗΜΑ ΕΠΙΣΤΗΜΗΣ ΚΑΙ ΤΕΧΝΟΛΟΓΙΑΣ ΥΛΙΚΩΝ

ΠΑΡΟΥΣΙΑΣΗ ΜΕΤΑΠΤΥΧΙΑΚΗΣ ΔΙΠΛΩΜΑΤΙΚΗΣ ΕΡΓΑΣΙΑΣ

Τίτλος

«Antibacterial Polymer Coatings on Flexible Substrates»

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Επιβλέπουσα Καθηγήτρια: Μαρία Βαμβακάκη

Τετάρτη 02/03/2022

11:00

Η παρουσίαση θα πραγματοποιηθεί στην **αίθουσα Β2 του Τμήματος Χημείας,** του Πανεπιστημίου Κρήτης.

ABSTRACT

Bacterial infections in food comprise a major threat for public health. Ensuring food safety has always been a challenge and therefore, intensive research has been devoted to successfully control microbial growth in food packaging. Recent scientific advances involve the coating of common food packaging materials, including polyethylene and polypropylene films, with non-toxic, antimicrobial polymers. In the present work, water-soluble, natural polymer derivatives were employed to coat flexible food packaging films, and confer them contact-active, antibacterial properties. The coatings, with thicknesses in the micrometer range, were prepared using Mayer rods, whereas their stability and adhesion onto the substrate was achieved using a cross-linker to chemically link the polymer chains and also attache them on the substrate. Fourier transform infrared spectroscopy and field-emission scanning electron microscopy both verified that the coatings were stable and remained intact onto the polyethylene films after one month immersion in water. The coated films presented enhanced antibacterial activity against a range of food-related bacteria, including Escherichia Coli, Lysteria Monocytogenes and

Staphylococcus Aureus. Notably, the coatings increased the oxygen and water vapor barrier properties of the polyethylene films, without affecting their mechanical strength. The above results suggest that the developed coatings are promising for use in active food packaging applications.