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### **강연제목:**

바이오 기반 항균 고분자 나노복합체의 공공안전 분야로의 응용

(Bio-Based Antimicrobial Polymeric Nanocomposites for Applications in Public Health)

### **Abstract:**

In this research, a natural additive sourced from recycled agricultural waste (e.g., walnut shell, banana peel, rice husk) was incorporated into polylactic acid (PLA) biopolymers to create a biodegradable nanocomposite film designed to improve mechanical strength and providing anti-biofouling properties. The surface of the PLA films were made superhydrophobic through an embedded method with polydimethylsiloxane-coated silica nanoparticles. The treated PLA films demonstrated over a 90% reduction in microorganism attachment compared to unmodified films. These enhanced PLA films show significant promise for public health applications, enhancing hygiene by addressing mechanical limitations and offering durable anti-biofouling features.

### **Brief Biosketch**

- **Doctor of Philosophy (Texas A&M University, College Station, TX, USA) 2016**
  - Major in Materials Science and Engineering
  - Dissertation title:  
*Effect of the surface properties on bacterial adhesion and novel approaches for prevention*
- **Master of Science (KAIST, Daejeon, Republic of Korea) 2009**
  - Major in Materials Science and Engineering
- **Bachelor of Science (Hanyang University, Seoul, Republic of Korea) 2007**
  - Major in Polymer Science and Engineering

### **Research Interest Keywords**

Public health, healthcare, hygienic, food safety, 3D printing, biosensors, endoscopes