



**Wolfson Department of Chemical Engineering Seminar**

**Monday, July 31<sup>st</sup>, 2023 at 13:30**

**Room 6**

**Synthesis and Characterization of Multifunctional Acrylate-based UV  
Polymerizable Resin for 3d Printing Application with Antimicrobial  
Properties**

**Naghm Rashed**

**MSc Seminar**

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Three-dimensional (3D) printing, or additive manufacturing (AM), is where new materials are continually added to the final printed object. Typically, to 3D-print a design, the design must be drawn in a CAD software package such as autodesk inventor, solidworks, etc. Our research focuses on photopolymerizable materials, including multifunctional monomers and prepolymers. Photopolymers are considered one of the leading group of materials in 3D printing and are widely used for digital light processing (DLP) and Stereolithography (SLA).

Photopolymers and photomonomers are light-sensitive materials, which change their physical or chemical properties when exposed to light sources, which initiates a reaction and changes the chemical and mechanical properties. This property allows both photomonomers and photopolymers to be used in diverse fields such as 3D printing, microfabrication, lithography, and optical recording.

Antimicrobial preservatives are widely used in the formulation of pharmaceutical creams and ointments as well as in cosmetics and toiletries. A special class of preservatives is known as formaldehyde-releasing agents, and they may exhibit their action by releasing formaldehyde or by action of the parent chemical structure of the compounds. Here we aim to develop a multifunctional acrylate-based UV polymerizable bio-Resin based on small molecules for 3d bio-Printing applications with antimicrobial properties where the correlation between chemical structure and printability is intensively studied. Also, in the seminar, we will present efforts for surface modifications of 3D-printed objects for functionalization and enhanced properties.

Refreshments will be served at 13:15.

