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| הפקולטה להנדסה כימיתע"ש וולפסון |  |  |
| The Wolfson Department of Chemical Engineering |  |  |

**Wolfson Department of Chemical Engineering Seminar**

**Wednesday, February 16th, 2022 at 13:30**

**Via Zoom:** [**https://technion.zoom.us/j/97577956516**](https://technion.zoom.us/j/97577956516)

**Multicomponent Crystalline Formulations of Antifibrotic Drugs for Implants Rejection Prevention Application**

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**MSc Seminar**

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Abstract

Biomedical implants have revolutionized modern medications and long-term therapies. However, the implantation itself causes a tissue injury, which provokes an immune response that in extreme cases leads to the implant encapsulation, also known as fibrosis. In order to overcome the immune response, it is common to systemically administrate anti-inflammatory drugs. Unfortunately, the lack of localized effect, which causes adverse effects and the weakening of the immune system, posing the patient in risk for infections. Therefore, a targeted approach for preventing foreign body reaction (FBR) is highly required.

Many drug delivery systems are carrier-based, which are highly potentiate. However, at many cases the carriers may provoke immune response and rejection cascade. Carrier-free crystalline formulations have many advantages over carrier-based drug delivery systems. Moreover, the possibility to combine several drugs / materials in the same crystalline system holds great potential to target several elements simultaneously, enabling to create an improved treatment for difficult diseases.

In this work, by manipulating the ratio of solvent:antisolvent ratio, we developed 6 varied multi-component crystalline formulations of three anti-fibrotic drugs. These formulations were found to be stable and characterized with PXRD, DSC, TGA as well as studied for release behavior. The developed formulation will serve as simultaneous carrier-free delivery system for localized and elongated release of drugs, targeting implant-rejection key players.