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|  |  |  הטכניון - מכון טכנולוגי לישראל TECHNION - ISRAEL INSTITUTE OF TECHNOLOGY  |
| הפקולטה להנדסה כימיתע"ש וולפסון |  |  |
| The Wolfson Department of Chemical Engineering |  |  |

**Wolfson Department of Chemical Engineering Seminar**

**Wednesday, June 9th, 2021 at 13:30**

**Lecture Hall No. 6**

**Modified Layered Double Hydroxides as heterogeneous basic catalysts**

**Samuel Alvarado-Salinas**

Department of Chemical Engineering, Technion

MSc Seminar

Advisor: Prof Oz Gazit

Biomass derived molecules serve as a large sustainable source for the production of renewable liquid fuels and value-added chemicals. As such, the efficient catalytic conversion of biomass is attracting increasing attention towards finding catalysts that can cope, on the one hand, with biomass molecular complexity and on the other with the commercial viability in a larger process.

The focus here is aldol type reactions. These reactions provide a versatile route for coupling biomass derived aldehydes and ketones as a first step in making long chain liquid fuels like diesel and jet fuel.

Aldol type reactions can be catalyzed by homogeneous basic catalysts such as aqueous KOH, NaOH and triethylamine, but their use in large scale industrial processes implies disadvantages such as environmental pollution, equipment corrosion, generation of waste streams and the need to design an additional separation step to remove the product from the liquid alkali catalyst. Alternative, these reactions can be promoted by solid base catalysts, which can be recycled and are less demanding with regards to process incorporation.

Layered double hydroxides (LDH’s) have been identified as a potential good solid base catalyst for aldol type reactions. In this seminar, I will be present what is known about how the active sites of LDH’s perform as a base catalyst and my approach for the LDH modification to improve its activity and selectivity. The nitro-aldol reaction will be used as a probe reaction to exemplify the effect of structural catalyst changes on reaction performance.

**Refreshments will be served at 13:15**

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**Wolfson Department of Chemical Engineering Seminar**

**Wednesday, June 9th, 2021 at 13:30**

**Lecture Hall No. 6**

**Using Surface Acoustic Waves to eliminate the Polymer Coating of a Substrate**

**Yifan Li**

Department of Chemical Engineering, Technion

MSc Seminar

Advisors: Prof. Ofer Manor and Prof. Dario Dekel

The formation of concentric deposit circles, following the evaporation of a coffee drop is known as the ‘coffee ring’ effect. This effect denotes the evaporation of a solution that contains non-volatile solutes. This phenomenon has been extensively studied from its discovery to its more specific cases, mainly due to its non-intuitiveness and its potential application in fabrication, nanoscience, and printing. Amongst the above studies, the elimination or control of the coffee ring effect (CRE) is of specific interest in this study. This is primarily because of the presence of CRE in several applications, including the fabrication of nanostructure by the self-assembly of spray printing.

We employ surface acoustic waves (SAWs) to control the CRE. SAWs are versatile; they have been utilized in various areas from communication and surface coating to drug delivery, micro and nanofluidics, micro and nano particle separation, etc. In previous experiments on the influence of SAWs on the CRE, it was found that the SAW may suppress the formation of patterned deposits to results in a smooth coating. We show that the SAW may further eliminate the coating of the SAW supporting substrate by a polymer film following the evaporation of a polymer solution. The polymer deposit is found on a nearby substrate, which does not support a SAW. Our analysis includes the evaporation of PMMA-Toluene solutions atop SAW supporting substrates, and image and profilometer analyses of the results.

**Refreshments will be served at 13:15**