

סמינריון

הנדך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות שתתקיים ביום ה' 24.12.2020

(ט' בטבת, תשפ"א), בשעה 12:30 באמצעות הזום :

<https://technion.zoom.us/j/99949978712>

מרצה : תום אלקלס

מנחה : פרופ'ח גלעד יוסיפון

על הנושא :

Dielectrophoresis investigation of engineered Janus particles and dynamic capsules

The seminar will be given in English

תקציר ההרצאה :

In contrast to the commonly used spherical Janus particles, here we use engineered Janus particles that are fabricated by means of the photolithography technique for precise control over their geometry and coated regions. Specifically, we study a “lollipop”-shaped complex particle, the head of which is coated with gold while its tail is left bare. Due to their distinct electrical properties (i.e., electrical polarizability), the particle exhibits force equilibrium, where opposite dielectrophoretic forces acting on its head and tail exactly cancel each other to yield a stable-equilibrium position. This is realized in a quadrupolar electrode array, where the equilibrium position of the engineered particle can be tuned by the frequency. This stands in contrast to the standard dielectrophoretic behavior, where the particle shifts position from either the center of the quad to the very edge of the electrodes when shifting from a negative to positive dielectrophoretic response, respectively. This opens up opportunities for positioning control of such complex particles for self-assembly, biosensing, biomimetic spermatozoa, and more. In addition, we performed DEP (i.e. dielectrophoresis) and ROT (i.e. electro-rotation) characterization of dynamic capsules made of double emulsion droplets that respond to varying pH conditions by changing the charge the membrane monomers. Thus, enabling these capsules to encapsulate drug and to release it under different pH conditions. Our results provide further physical understanding to these important drug delivery systems.

בברכה,

פז'א"ח את'י אא

מרכז הסמינרים