

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ה' 23.02.17
(כז' בשבט, תשע"ז), בניין דן-קאהן, קומה 0, אודיטוריום 1, 14:30.

ירצה: איליה לויפרמן

מנחה: פרופ"מ מתיו סאס

על הנושא:

A zinc-bromine redox flow battery with fluidized bed electrode

The seminar will be given in English

להלן תקציר ההרצאה:

To increase the penetration of intermittent renewable energy sources such as solar and wind, highly efficient energy storage systems are required to offset intermittency. One of the most promising storage solutions are redox flow batteries (RFB), which are a combination of fuel cell and battery systems. Flow batteries enable uncoupled energy (stored in tanks) and power (delivered in the battery), and thus present an attractive system for scale up to grid-scale storage. One of the most developed and promising RFB chemistries is the zinc-bromine hybrid RFB because of its low cost active materials, high open circuit potential of 1.82V, energy density of ~70 wh/kg, and flat charge-discharge voltage profile. The main drawbacks, however is the formation of zinc dendrites during battery charging which can cause battery failure. Recently slurry electrodes were introduced in an all-iron redox flow battery with MWCNT slurry, which allowed for metal deposition to occur onto the particles and not onto a static current collector, limiting dendrite formation. However, slurries are limited by poor active material loading and electric conductivity, and the battery performance was unstable over narrow state-of-charge ranges. We here introduce the use of high loading fluidized bed anode for use in a zinc-bromine flow battery, and demonstrate high performance and stable charge discharge cycling over wider state-of-charge ranges. Along with our proof-of-concept results, the benefits and challenges of this new RFB system will be discussed.

בברכה,

פרופ"א שמואל אוסובסקי
מרכז הסמינרים