

סמינריון

הנדך מוזמנת להרצאה סמינריונית של הפקולטה להנדסת מכונות במסגרת הדוקטורט שתתקיים
ביום ב' 17.08.2020 (כ"ז באב, תש"פ), בשעה 14:30 באמצעות הזום :

<https://technion.zoom.us/j/94298363811>

מרצה : שמרי חביב

מנחה : פרופ'ח כרמל רוטשילד

על הנושא :

Luminescent Solar Power

The seminar will be given in English

תקציר ההרצאה :

The challenge in solar energy today is not the cost of photovoltaic (PV) electricity generation, already competing with fossil fuel prices, but rather utility-scale energy storage and flexibility in supply. Low-cost thermal energy storage (TES) exists but relies on expensive heat engines and solar fields as used in concentrated solar power (CSP) plants. In this work, we introduce luminescent solar power (LSP), a hybrid PV/thermal electricity generation concept that combines the advantages of both PV and CSP for a cost-effective dispatchable solar energy. In this concept sunlight is absorbed in a photoluminescent (PL) absorber, followed by red-shifted PL emission matched to an adjacent PV cell's band-edge. This way the PV cell operates nearly as efficiently as under direct illumination, but with minimal excessive heat. The PL-absorber temperature rises due to thermalization, allowing it to store the excessive heat, which can later be converted into electricity. Tailored luminescent materials that support an additional 1.5 kW·h PV-electricity for every 1 kW·h of (virtual) heat engine-electricity, with a dynamic shift between the two sources are experimentally demonstrated. Such an ideal hybrid system may lead to a potential reduction in the cost of electricity for a base-load solution.

בברכה,

פרופ'אמית' סאס
מרכז הסמינרים