



סמינר - SEMINAR

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ב' 20.07.15 (ד' באב, תשע"ה), בבניין דן-קאהן, קומה 0, אודיטוריום 1, שעה 14:30.

ירצה:

Dr. Nir Tzabar

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על הנושא:

Joule-Thomson Cryogenic Cooling: Principles and Applications

להלן תקציר ההרצאה:

Cryogenic cooling is an enabling technology for many applications operating at the low temperatures, ranging from a few mili-Kelvins to about 150 K and with heat loads between a few mili-Watts up to Mega-Watts. Different cooling techniques cover this wide range of cooling requirements, where in many cases the combination of several cooling techniques is implemented to best comply with the system requirements.

Joule-Thomson (JT) cryocoolers are based on the expansion of a pressurized fluid in a restriction where a reduction of the fluid temperature is obtained. A recuperative heat exchanger allows further cooling down to cryogenic temperatures. Traditional JT cryocoolers operate with pure gases which reach their boiling temperatures in which heat is adsorbed from the device that has to be cooled. Regardless the relatively low thermodynamic efficiency of JT cryocoolers, in some applications they comply best with the system requirements, for example: defense, medical, space, and LNG applications. During the seminar, some fundamental aspects of the JT cryogenic cooling cycle are discussed to better understand the strengths and limitations of the cycle.

Using mixed gases instead of pure gases as refrigerants in JT cryocoolers holds essential benefits. It is widely in use for natural gas liquefaction process and during the last 20 years much effort is invested to extend the use of mixed refrigerants in additional cooling applications like electronic devices, imaging detectors, cryosurgical devices, and medium size superconductivity applications.

המארח: פרופ' גרשון גרוסמן

בברכה,

פרופ' ניר אבי איתן
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