

## סמינריון

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ד' 28.01.15 (ח' בשבט, תשע"ה), בבניין דן-קאהן, קומה 0, באודיטוריום 1 בשעה 13:30.

ירצה: לאוניד גליקין

מנחה: פרופ' דניאל ריטל  
מנחה שותף: ד"ר אברהם דורוגוי

על הנושא:

### **A study on dynamic penetration of layered composite by a metallic projectile**

להלן תקציר ההרצאה:

Polycarbonate (PC) and Polymethyl methacrylate (PMMA) are two polymers commonly used in military and civilian applications as a protective media. These materials are light and have a good ballistic efficiency compared to other protective materials, especially for application as transparent armor.

There is a continuous effort to improve the resistance of armor materials. One of the proven ways is through the application of compressive pre-stress on brittle materials. There are several works describing application of pre-stress on ceramic and concrete with positive conclusions about increased impact resistance. Recently several works have been reported in which lateral confinement was applied on PC and PMMA targets.

Confinement of PC showed to slightly increase the ballistic resistance to relatively slow (200-250 m/s) penetrators while not altering the ductile failure property of PC. Confinement of PMMA showed enhanced ballistic resistance with distinct change in target state – from shattered target by radial cracks, to intact target with dish like cracks.

In this study a combined experimental – numerical investigation was done in order to further explore the pre-stress effect on PC and PMMA at higher impact velocities.

PC: The experimental results show a distinct ballistic efficiency of the confined target. Numerical study was conducted to understand the contribution of different factors on the enhanced efficiency. Analytical modeling will also be reported.

PMMA: The experimental results show a distinct ballistic efficiency of the confined target and very different fracture patterns compared to unconfined target. Moreover, in unconfined target a size effect was identified. Numerical studies were performed with a goal to understand penetration in fractured media and the influence of fragmentation on penetration depth.

בברכה,

ד"ר אריאל שטרן

מרכז הסמינרים