

## סמינר - SEMINAR

הנך מוזמן/ת להרצאה סמינריונית של הפקולטה להנדסת מכונות, שתתקיים ביום ב' 10.02.2020 (ט"ו בשבט תש"פ), בניין דן קאהן, אודיטוריום 1, 14:30.

**מרצה:**

**Prof. Frédéric Barlat**

Graduate Institute of Ferrous Technology, Pohang University of Science and Technology,  
77 Cheongam-ro, Nam-gu, Pohang, Gyeongbuk 37673, Republic of Korea

**על הנושא:**

### **DISTORTIONAL PLASTICITY FRAMEWORK FOR ADVANCED HIGH STRENGTH STEELS**

The seminar will be given in English

**להלן תקציר ההרצאה:**

New features introduced recently in a purely distortional plasticity framework are discussed and illustrated. This framework was developed to capture the hardening fluctuations, such as Bauschinger and cross-loading effects, that occur during strain path changes. In particular, an alternative description of the yield surface distortion is proposed based on crystal plasticity simulation results. In addition, the influence of the hydrostatic pressure, which manifests itself by a strength differential between uniaxial tension and compression, is integrated in the formulation. State variable evolution equations are improved to allow for a smoother transition between pure cross-loading and pure reversal stress changes. Applications of this plasticity framework to advanced high strength steel (AHSS) sheets, dual-phase DP780 and transformation-induced plasticity TRIP1180, are presented. The sequential optimization of different coefficient sets is outlined, demonstrating the relative simplicity of the calibration procedure. Results of finite element simulations based on this plasticity framework for an industrial part are reported, indicating the robustness of this model and its numerical implementation.

*SHORT RESUME of Professor Frédéric Barlat*

Professor Barlat received a PhD in Mechanics from the Grenoble Institute of Technology, France, in 1984. The same year, he joined Alcoa Technical Center near Pittsburgh PA, the research facility of Alcoa Inc, where he conducted scientific research for more than 20 years. Dr. Barlat is currently a professor at the Pohang University of Science and Technology (POSTECH) in the Republic of Korea.

Professor Barlat is an expert in the fields of plasticity and forming. He is the Editor-In-Chief of the Elsevier book series on Plasticity of Materials. He is also an associate editor of Mechanics of Materials (Elsevier) and the International Journal of Material Forming (Springer). In addition, he serves as a member of the advisory boards of a number of peer-reviewed scientific journals. Dr. Barlat published over 400 articles, more than half in peer-reviewed scientific journals, totaling close to 13,000 citations. He received a number of awards including, the 2013 Khan International Award for outstanding life-long contributions to the field of Plasticity. In 2016, he was elected by the Romanian Academy as an honorary member.

**מאת: פרופ' דניאל ריטל**

בברכה,

פרופ' איתי סאס

מרכז הסמינרים