
臺灣大學應用力學研究所
演 講 公 告

主 講 人：顏鴻威副教授

國立臺灣大學材料科學與工程學系

講 題：高強度且高延性的鋼鐵設計：與差排的共舞

主 持 人：陳志鴻助理教授

時 間：110年10月4日（星期一）下午2時20分開始

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Design of Strong but Ductile Steels: Play with Dislocations

Hung-Wei (Homer) Yen

Department of Materials Science & Engineering, National Taiwan University

In structural materials, the trade-off between strength and ductility is so challenging that metallurgists pay much effort for materials novelty to enable stronger steels with excellent ductility. A new, or partially new, idea is to increase the uniform dislocation density, and, therefore, plasticity can be homogeneously mediated in the crystal. In this talk, three novel steels will be introduced based on their abnormal plasticity enabled by constrained dislocation. During deformation, the constrained dislocations are able to mediate uniform multiplication of dislocations via Orowan Looping, Deformation Twinning, or Dislocation Avalanche in three cases. Therefore, engineering constrained dislocations makes strong but ductile steel become AVANTAR.

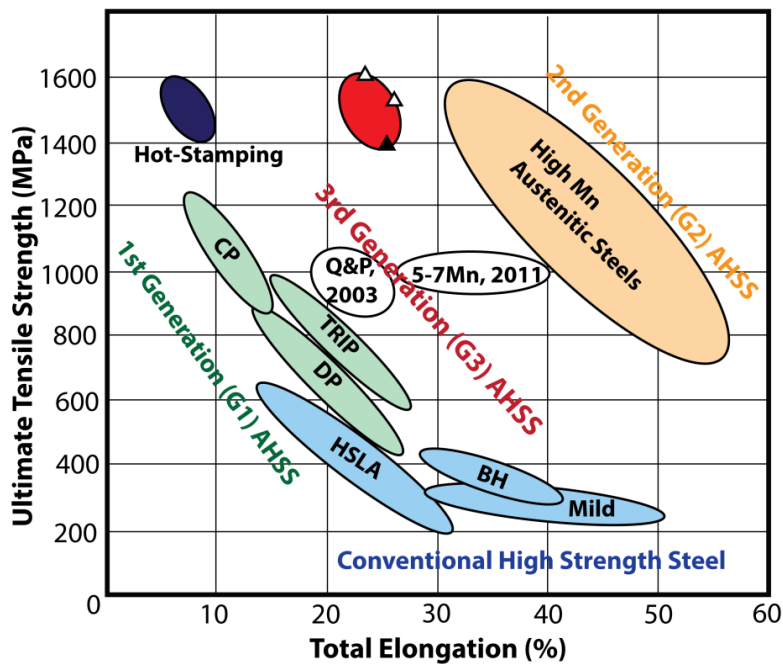


Figure 1 The strength-ductility trade-off in advanced high-strength steels