



**Imperial College  
London**

**Speaker 4**

*How low can you go?  
The medium manganese limbo*



**Thomas Kwok**

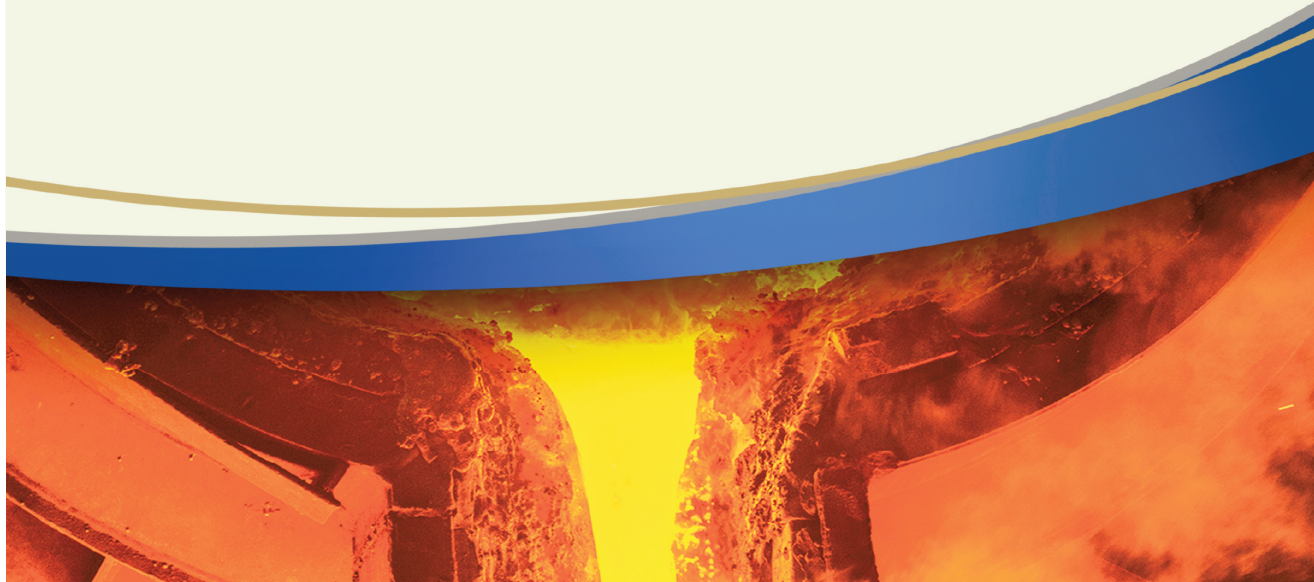
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**ABSTRACT:**  
Medium Mn Steel (MMS) with a Mn content of 4-12 wt% has attracted significant research attention as a potential successor to Twinning Induced Plasticity (TWIP) steels for energy absorbing applications. MMS have been found to exhibit a combined twinning and transformation induced plasticity effect (TWIP+TRIP) which provides a high and sustained strain hardening rate that can surpass TWIP steels.

The MMS alloy design and processing concept will be presented, largely based on incrementally lowering the Mn content through a series of alloys while maximising the TWIP+TRIP effect to increase the energy absorption upon deformation. The TWIP+TRIP effect will also be studied in greater detail using electron backscatter diffraction and transmission electron microscopy. Emphasis will also be placed on key learning points to aid future MMS alloy development and scale up.



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