

# Assessment of Cracking Susceptibility of Steel in Continuous Casting Process Employing High-Temperature Laser-Scanning Confocal Microscopy

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## **(Invited presentation)**

When a peritectic steel solidifies in the mould in continuous casting process, the thin solidifying shell is likely to deform due to the severe contraction during peritectic transition resulting in the detachment of the solidified shell from the mould. This incurs a decrease in heat flux leading to hot spots and blown grains, which significantly increases the risk of surface cracking and/or breakout. In order to explain industrial observations related with the problems occurring during continuous casting of peritectic steels, concentric solidification experiments were conducted employing high-temperature laser-scanning confocal microscopy. We proved from the experimental observation that the fraction of  $\delta$  phase prior to transformation,  $\delta$ -to- $\gamma$  transformation rate ( $\delta/\gamma$  interface speed) and the extent of undercooling from the equilibrium peritectic temperature are the major indicators of cracking susceptibility. Also a new technique which combines synchronically *in-situ* observations made within a high-temperature laser-scanning confocal microscope with differential thermal analysis functionality will be introduced.