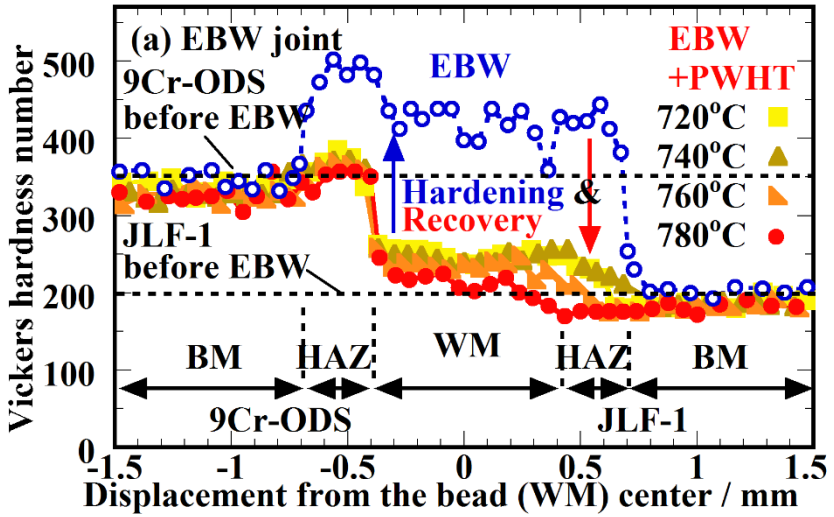
Optimal welding conditions were obtained for joints between 9Cr-ODS and JLF-1 steels

Nagasaka et al., MPT/P5-21



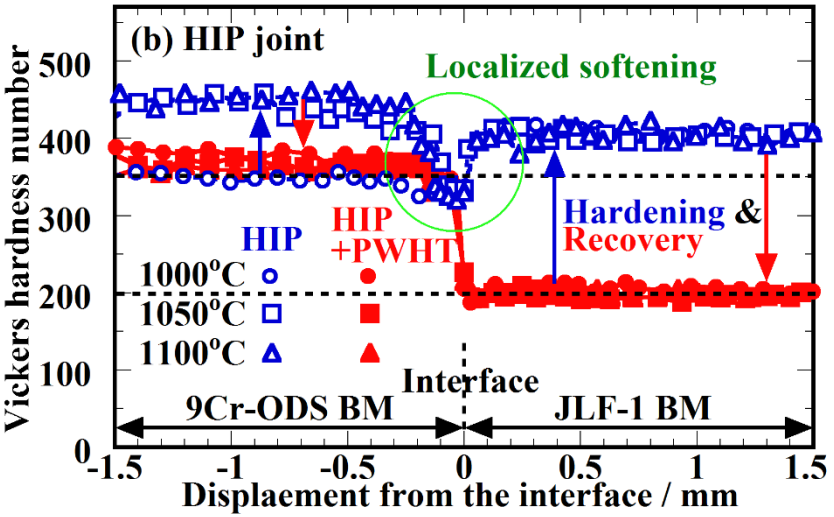


Fig. Hardness around the bonding interface in the dissimilar-metals joints

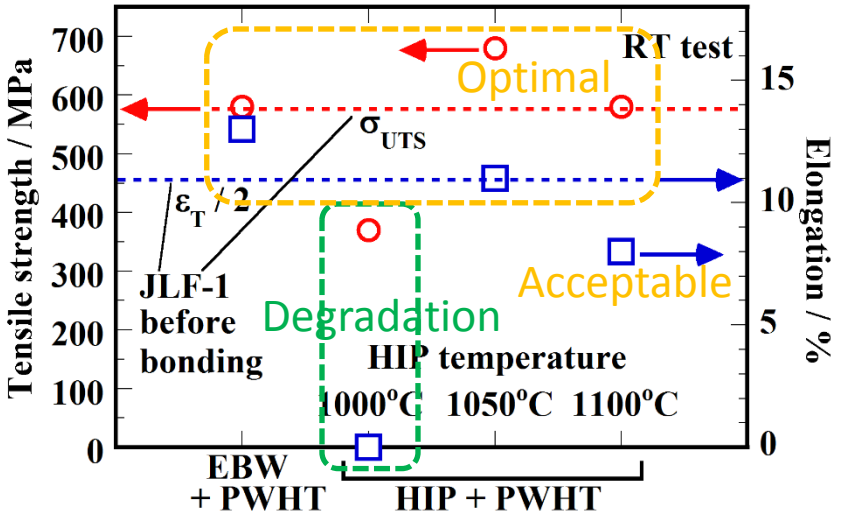


Fig. Tensile properties of dissimilar-metals joint with various welding conditions

Optimal conditions:

(1) Electron-beam welding (EBW) process

Post-weld heat treatment (PWHT): 780°C x 1 h

→ To form tempered martensite by recovery

(2) Hot iso-static pressing (HIP) process

HIP temperature: 1050°C or 1100°C

→ To enhance matrix Fe diffusion

PWHT: 1050°C x 1 h + 36°C /min cooling + 780°C x 1 h

→ To eliminate the locarized soften and to form refined carbide and tempered martensite by recovery