Karlsruhe Institute of Technology

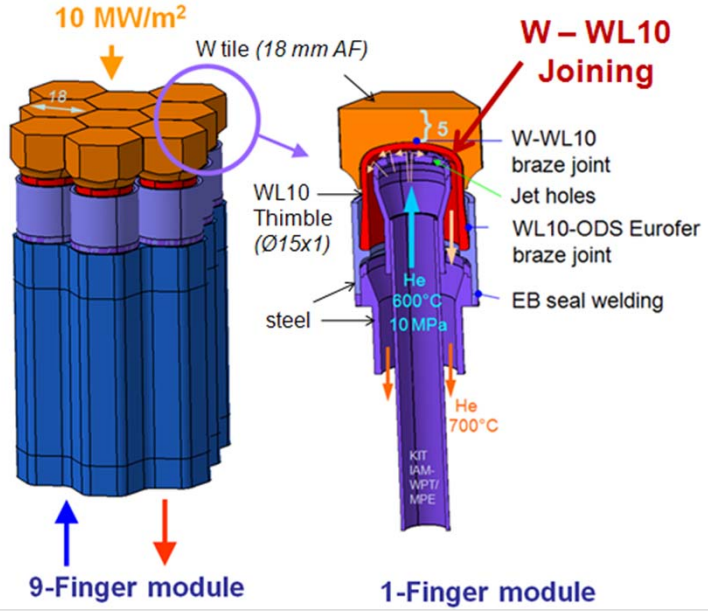
MAT-HHFM Monitoring Meeting
EFDA – CSU Garching, Feb 21 – 22, 2013

WP12-MAT-01-HHFM-04-07_KIT_BS
“Joining of W components with Ti interlayer”

Reporting period: July 2012 - February 2013

Principal Investigator: P. Norajitra (KIT)

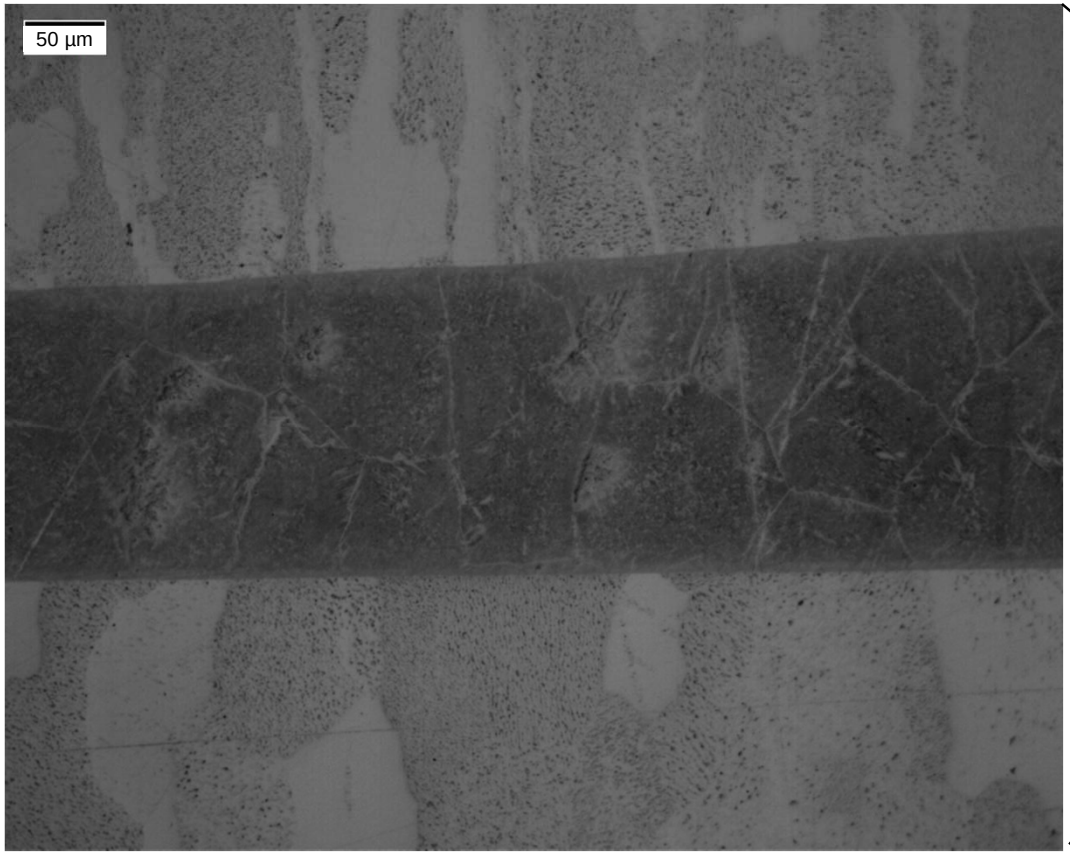
KARLSRUHE INSTITUTE OF TECHNOLOGY (KIT)

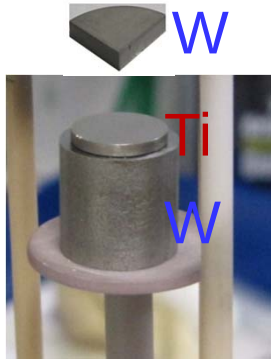


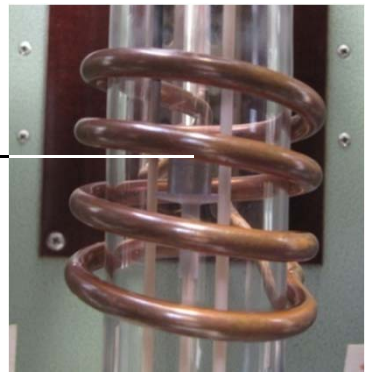
Last W–Ti–W brazing tests using induction heating

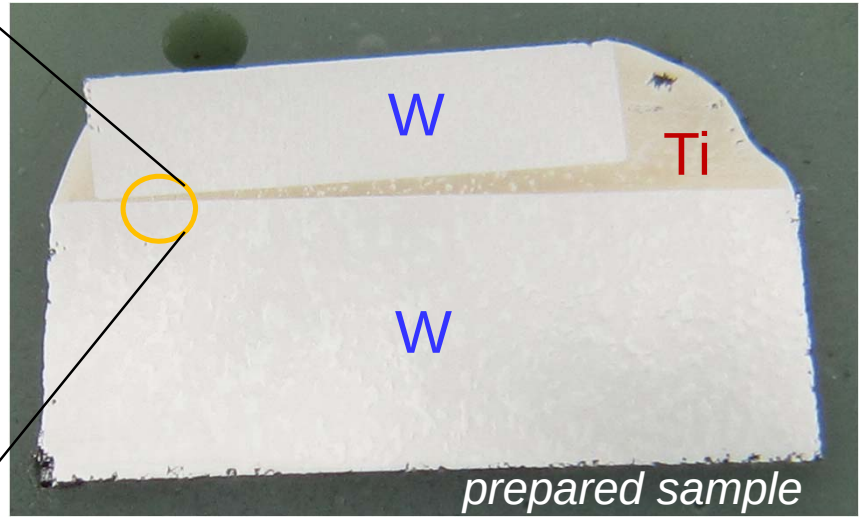
S. Antusch, W. Basuki, S. Berberich, P. Norajitra, L. Spatafora, U. Stegmaier
EFDA MON MTG, Ljubljana, June 2012

Result: perfectly wetted area



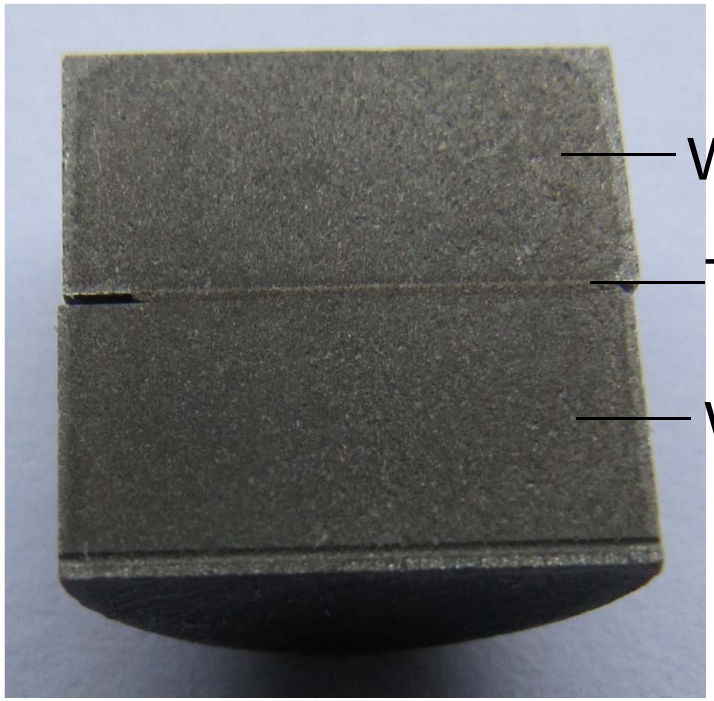


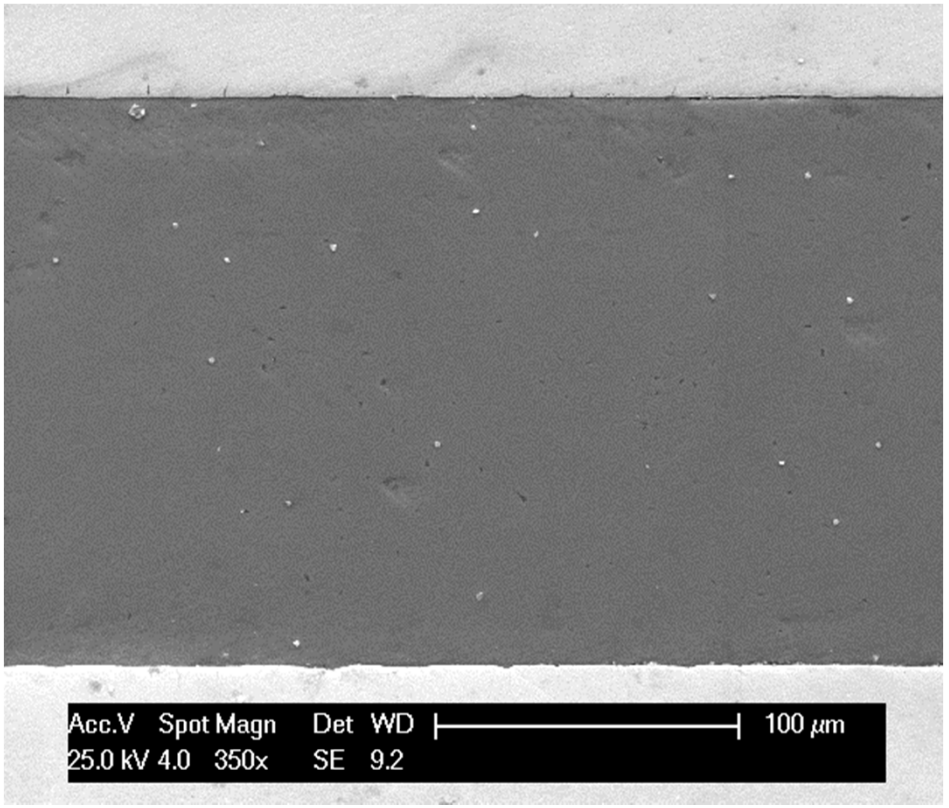




W-W joining with Ti interlayer by diffusion bonding

W. Basuki, P. Norajitra, L. Spatafora





W rod: Ø 10 mm x 5 mm
Ti foil: Ø 8 mm x 1 mm
P > 10 MPa
T > 750 °C
T ~ 4 h

SEM: Good adhesion of Ti and W surfaces!

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Summary

- W-Ti-W brazing tests successfully done using induction furnace. Perfect wetting of pure Ti (T_{melt}=*1668°C*) on W surface (at T_W = *1820 °C)*.
- Also W-Ti-W diffusion bonding tests were successfully performed. Good adhesion of Ti and W surfaces was achieved.
- Open issue: Brazing and diffusion bonding tests with Ti for the real joint between W tile and WL10 thimble.

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