Ultra High Temperatures for Neutron Scattering facilities

Hotel Abando, Bilbao (Spain)
October 10, 2007

supported by the NMI3 Networking Activity

Containerless Furnaces

- ***Status***: ultra high temperatures are not proposed at neutron facilities while there is a scientific interest
- ***Proposed project***: to build compact furnaces optimised for neutron scattering and reaching 3000K
- ***Solutions***: Containerless technics avoiding contamination
  - Aerodynamic levitation
  - Electrostatic levitation
  - Electromagnetic levitation, Acoustic levitation?

Containerless Furnaces

- Examples:
  - The change in density observed when alumina melts (2500K) is related to the transition from octahedral to tetrahedral coordination.

Phys. Rev. Letters **86**, 21 (2001) 4839

  - The icosahedral short range order predicted 50 years ago in deeply undercooled metallic melts has finally been confirmed experimentally.

Phys. Rev. Letters **89**, 7 (2002) 75507

- 14:30 Welcome
- 14:50 Louis HENNET - CMHRT

  “Structure & Dynamics of aerodynamically levitated liquids - part 1: Technical aspects”

- 15:20 Irina POZDNYAKOVA - CMHRT

  “Structure & Dynamics of aerodynamically levitated liquids - part 1: Scientific aspects”

- 15:50 Coffee break

- 16:20 Ivan EGRY - DLR

  "Electromagnetic levitation: Scientific & Technical aspects"

- 16:50 Lothar HOLITZNER - PSI

  "Levitation of single solid or liquid samples in ultra-sonic single-axis standing-wave levitators"

- 17:20 Way-Tung (Hal) LEE - SNS

  - "Time resolved characterisation of supercooled liquids using a containerless environment and stroboscopic data acquisition"

- 18:20 Discussions

  Technical issues

  European facilities interests and commitments

  Intellectual Property Rights

  Collaborations

- 20:30 Dinner at the Hotel Abando