

Malik Blackman

In the case of Thermal Interface Materials (TIMs) wouldn't this new material in between the interface introduce additional or sub-interfaces? Or would this new material simply reduce resistance of the heat energy passing through material 1 to material 2?

Tianyu Yang

What do you think of using thermal energy storage materials as TIMs providing thermal buffering other than thermal conduction? What are the challenges and opportunities?

Moritz Limpinsel: What do you think needs to happen for thermal conductivity methods to become as common/accessible/accurate as electrical conductivity methods?

Lucas Lindsay

Any comments on the future of "mode-dependent" thermal metrologies?

Ankit Negi

I am using TDTR and 3-omega for measuring thermal properties of different materials. We receive requests by people from different departments for thermal conductivity measurements. One of the major obstacles I usually face is related to surface morphology, specifically roughness. Both of the techniques I mentioned have limitations on surface roughness to some extent (more stringent for TDTR than 3-omega). In a lot of cases, surface polishing is quite cumbersome, if not impossible to say the least. I am just thinking if there is a simpler way to bypass the surface requirements or at least make it less stringent, maybe say by depositing an additional layer to make the surface smoother? Is this something that can be done?

Albraa Alsaati

Fluids are used in many thermal applications. Do you see a need for a technique for thermal spatial mapping of liquid layer analogous to Particle Image Velocimetry (PIV) but for temperature measurements rather than velocity? If so, what approach do you envision is capable of thermal spatial mapping of fluids?

Andrew Zigang Zhao

Is laser flash still reliable for liquids at extremely high temperatures when convection could be a source of error? Say for molten salts and molten metals?

Kenny Yu

What do you think of CW FDTR compared to TDTR for TBC measurements, especially in terms of accuracy?

Anonymous Attendee

Can we quantify the "surface roughness" limitation with TDTR measurement? Maybe mean Ra or Rms of the surface with respect to wavelength?

Xiulin Ruan

What do you think are the future opportunities for thermal metrology methods and simulation/theoretical methods to motivate and help each other to advance the field? Can you name one FUTURE theory and simulation capability you would like to see to assist your experiments?

Anonymous Attendee

What are the technical challenges for high pressure diamond anvil cell measurement of thermal conductivity (for graphite, boron arsenide, boron nitride, etc.)?

Som Shrestha

Recent developments in thermal metrology are mainly suitable for “high thermal conductivity” materials. Recent developments in super insulating materials require thermal metrology that can measure thermal conductivity less than 3 mW/m*K. What would be the best thermal metrology for such materials, other than using a heat flow meter apparatus?

Tianyu Yang

What do you think of the development of theoretical or semi-empirical models to benchmark experimental measurements? Could it be helpful for machine learning to discover new materials?

Anonymous Attendee

Are there a lot of industry applications which require liquid thermometry inside the fluid?

Songrui Hou

In TDTR measurements, Are the problems related to surface roughness completely understood? To what extent can the 2-tint technique help with roughness?

Anonymous Attendee

What about directionality of the thermal boundary resistance? The TBR definition is the temperature drop on an interface which is perpendicular to the heat flux. Can we talk about angle dependent TBR or even TBR parallel to the heat flux (e.g., 45° or even 90° for in-plane thermal conductivity of superlattices)? Is the specular parameter enough to describe the TBR parallel to the heat flux?

Hongbin Ma

What is the best way to increase the latent heat of Phase Change Materials (solid-liquid)?