

Ronald Warzoha 10:19 AM

Hi Bara! How do you address the contact thermal resistance at surfaces between the CNTs (e.g. phonon scattering at individual boundaries), and the macroscopic thermal resistance between the CNTs and the adjacent substrates?

Mark E Alston 10:31 AM

Thank you All for the interesting talks and discussions

Sidharth Raut 10:33 AM

To David Broido, could you please share the journal name as a reference to your talk?

Lucas Lindsay 10:39 AM

Yongjie/David - Thanks for the talks. Why are defects so important in governing thermal conductivity of BAs, but not so in diamond?

Carlos Daniel Diaz Marin 10:40 AM

Is there a fundamental limit to how high the thermal conductivity of a material can be?

Anonymous Attendee 10:55 AM

Thank you. Questions for high thermal conductivity in pure polymers:

In reality, rather than simulation, what would be the highest limit to thermal conductivity in polymers, especially, highest limit to thermal conductivity in amorphous polymer region? Are the best of polymers now available close to this limit? Or can we expect to see further progress as materials continue to improve, without increasing crystallinity?

Richard Zhang 10:57 AM

@Sara Ronca Could the optical/visual properties of drawn PE change?

Shigeo Maruyama 10:58 AM

Thank you, David. Identifying the Boron isotope effect on c-BN is wonderful! And, BA discussion is also wonderful. How do we expect on 2D h-BN or h-BN tubes? These are quite important material in future devised. On the other hand, overcoming the natural isotope effect in practical application seems very difficult. What do you think?

Adela Li 11:04 AM

For David: when combining light and heavy atoms, does the size difference and structural inhomogeneity induce local stresses that affect the performance and stability of the compound?

Richard Zhang 11:05 AM

@David Broido On applicability of the 4 phonon models, are there limitations that may overtake its capabilities? Why not a 9000-phonon model?

Pablo L 11:05 AM

What about graphene? Could it be a good candidate for thermal management?

Rifat Mahmud 11:05 AM

To Prof. Zhiting Tian: Can the thermal conductivity of graphene deposited on a substrate reach that of the suspended Graphene, at least theoretically?

Brandon Smith 11:08 AM

What are your thoughts on flexible electronics and the thermal challenge associated with dissipating the heat, which is limited by the polymer substrate? Will flexible electronics ever be viable?

Anonymous Attendee 11:11 AM

Question for Bara - for the commercial applications of your research, what are the opportunities and challenges in energy and industrial applications?

Anonymous Attendee 11:13 AM

High thermal conductivity polymers for thermal management in addition to polymer melting temperature, what are other concerns do you have when pure polymers with high thermal conductivity are applied to thermal management applications?

How can we tackle plastic waste problem?

Anonymous Attendee 11:13 AM

Would four-phonon scattering suppress the thermal conductivity of graphene be similar to how it suppresses the thermal conductivity in Boron Arsenide?

Xiulin Ruan 11:24 AM

Hi Zhiting, here is Xiulin from Purdue. Just adding to David's comments on four-phonon scattering in graphene. Our calculation of four-phonon scattering in graphene was based on Lucas and David' empirical potentials and not first principles, so the results in our paper on graphene were qualitative, not quantitative at this moment.

Nicholas Robert Jankowski

Prof Ronca: What are the thoughts on upper limit for oriented polymer thermal conductivities? I noticed on the plot of thermal conductivities the highest measured values were significantly higher than the prediction. Is there modeling work being done to explain that difference, and might it suggest ways to approach/exceed the 100W/mK level?

Nicholas Robert Jankowski

open question: the focus on 2D materials is promising, but ultimately runs into the problem of simply not having enough cross-sectional area for moving significant amounts of heat. Are there non-2D materials with bulk options than diamond or BAs on the horizon?

Derin O.

Hi, will you be able to send presentations of talks to the participants?

Anonymous Attendee

would be interested in the opposite topic: insulators and ultra-low thermal conductivity materials - both bulk and thin film/integratable options