The Data in this folder are from this publication:

2014 Hofmeister, A.M., Dong, J.J., and Branlund J.M. Thermal diffusivity of electrical insulators at high temperatures: evidence for diffusion of phonon-polaritons at infrared frequencies augmenting phonon heat conduction, *Journal of Applied Physics***115**, 163517 (2014); <http://dx.doi.org/10.1063/1.4873295>

**See Crystals Database File in metadata folder for complete list of Crystal samples/compositions and references.**

**Data collected at Washington University, St. Louis, MO**

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|  |  |  |
| --- | --- | --- |
| **Sample/Composition** | **Description** | **Links** |
| Diamond (2 crystals) - C | From Element Six, 1.355mm | N/A |
| Poly diamond TE - C | From Element Six, 0.50mm, Item#145-500-0095 | https://e6cvd.com/us/application/thermal/tm100-10x10-mm-0-50-mm-thick.html |
| Silicon plate - Si 99.999 % | From Alfa Aesar CAS#7440-21-3, 0.525mm thick | <https://www.alfa.com/en/catalog/039112/> |
| Silicon plate - Si 99.999 % | From Alfa Aesar CAS#7440-21-3, 2.016mm thick | https://www.alfa.com/en/catalog/039112/ |
| Silicon wafers - Si P-type, B doped, 1-10 ohm-cm | From MTI Corp. 0.974mm thick | http://mtixtl.com/xtlflyers/Si.pdf |
| Silicon wafers - Si P-type, B doped, 8-12 ohm-cm | From MTI Corp. 0.456mm thick | http://mtixtl.com/xtlflyers/Si.pdf |
| Silicon wafers - Si N-type, 1900-2800 ohm-cm | From MTI Corp. 0.611mm thick | http://mtixtl.com/xtlflyers/Si.pdf |
| germanium - Ge N-type, >35ohm-cm | From MTI Corp. 0.525mm thick | http://www.mtixtl.com/xtlflyers/Ge.pdf |
| Fluorite - CaF2 | From International Crystal Labs. 2.04mm thick | N/A |
| Frankdicksonite - BaF2 | From International Crystal Labs. 1.12mm thick | N/A |
| Cubic zirconia - Zr0.92Y0.08O2 | From MTI Corp. 0.511mm thick | N/A |
| Cubic zirconia - ~Zr0.87Y0.08Hf0.05O2 | From Morion Corp. 1.205 mm thick | N/A |
| TeO2 [110] - TeO2 | From MTI Corp. 0.52mm thick | http://www.mtixtl.com/xtlflyers/TeO2.pdf |
| Sellaite||c - MgF2 | From MTI Corp. 0.953mm thick | http://www.mtixtl.com/xtlflyers/MgF.pdf |
| Sellaite^c - MgF2 | From MTI Corp. 1.023mm thick | http://www.mtixtl.com/xtlflyers/MgF.pdf |

Files

Diffusivity Data – in Excel

Probe Data – PRN Files

Column 1: Wave number (cm-1)

Column 2: Absorption Coefficient (mm-1)

|  |  |  |  |
| --- | --- | --- | --- |
| **IR Spectra File Name** | **Sample Thickness (mm)** | **Description** | **Sample Type** |
| DIATM128 | 0.491 | diamond PE is opaque, artifacts below 2500Wn, 500 scans, res = 2 | diamond tm |
| YDIA126 | 1.373 | artifacts below 2500Wn, 500 scans, res = 2 | yellow diamond |
| NDO808A | 2.001 | artifacts below 2500Wn, 250 scans, res = 2 | Namibia diamond |