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Key Words Condensed Matter Physics, Optical Spectroscopy, High-temperature Superconductivity

Research Area We use Fourier transform infrared (FTIR) spectrometers and a monochromatic type optical spectrometer to cover a broad spectral range from far infrared (FIR) through ultraviolet (UV). We investigate low-lying (or intraband) optical excitations, characteristic collective modes including pure and hybrid phonon modes, and electronic (interband) transitions of various novel material systems. The material systems would be

- Unconventional superconductors: High-temperature superconductors (copper oxides and Fe-based pnictides) and heavy fermion systems
- Strongly Correlated systems: *d-* or *f-* electron bulk systems and *3d* transition metal oxide superlattice systems
- Low-dimensional system: graphene, graphite, etc.
- Organic solar cells

We also would like to contribute other areas of science by sharing my spectroscopy technique and knowledge with other researchers through close collaboration:

Education

- 2001 PhD University of Florida, Gainesville, Florida, USA
- 1991 MSc Pusan National University, Busan, Korea
- 1989 BSc Pusan National University, Busan, Korea

Experience

- 2007 Aug – 2009 Feb Postdoctoral Research Associate, University of Florida, USA
- 2005 Sept – 2007 July Research Scientist, McMaster University, Canada
- 2003 Sept – 2005 Aug Research Associate, McMaster University, Canada
- 2001 Sept -2003 Aug Postdoctoral Fellow, McMaster University, Canada
- 2001 May -2001 Aug Postdoctoral Fellow, University of Florida, USA

Selected Publication

- **Hidden non-Fermi liquid behavior caused by magnetic phase transition in Ni-doped Ba-122 pnictides;** Seokbae Lee, Kiyong Choi, Eilho Jung, Seulki Roh, Soohyeon Shin, Tuson Park, and Jungseek Hwang, *Scientific Reports* **5**, 12156/1-9 (2015).
- **Bosons in high-temperature superconductors: an experimental survey** Joules P. Carbotte, Thomas Timusk, and Jungseek Hwang, *Reports on Progress in Physics* **74**, 066501/1-43 (2011).
- **The electron-boson spectral density function of underdoped BiSr₂CaCu₂O_{8+δ} and YBa₂Cu₃O_{6.50};** J. Hwang, *Physical Review B* **83**, 014507/1-7 (2011).
- **Evidence for a pseudogap in underdoped BiSr₂CaCu₂O_{8+δ} and YBa₂Cu₃O_{6.50} from in-plane optical conductivity measurements;** J. Hwang, J. P. Carbotte and T. Timusk, *Physical Review Letters* **100**, 177005/1-4 (2008).
- **Doping dependent optical properties of BiSr₂CaCu₂O_{8+δ}** (Invited for a special issue on strongly correlated electrons); J. Hwang, T. Timusk and G. D. Gu, *Journal of Physics: Condensed Matter* **19**, 125208/1-32 (2007).
- **Scanning-tunnelling spectra of cuprates;** J. Hwang, T. Timusk and J. P. Carbotte, *Nature (London)* **446**, E3-E4 Brief Communications Arising (8 March 2007).
- **a-axis optical conductivity of detwinned ortho-II YBaCu₃O_{6.50};** J. Hwang, J. Yang, T. Timusk, S. G. Sharapov, J. P. Carbotte, D. A. Bonn, Ruixing Liang and W. N. Hardy, *Physical Review B* **73**, 014508/1-12 (2006)
- **High-transition-temperature superconductivity in the absence of the magnetic resonance mode;** J. Hwang, T. Timusk and G. D. Gu, *Nature (London)* **427**, 714-717 (2004).

Others

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