

Curriculum Vitae

Keeyoon Sung, Ph.D

M/S183-301

Lab Studies and Modeling (3286)

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Education

- Ph.D. in Atmospheric Science, ITPA/MSRC, SUNY at Stony Brook, NY (2003)
- Course completion, M.Sc. program in Astronomy, Seoul Nat'l Univ., S. Korea (1998)
- B.Sc. in Astronomy and Space Science, Chungnam Nat'l Univ., S. Korea (1996)
- B.A. in English Education, Seoul Nat'l Univ., S. Korea (1990)

Professional experiences

- Scientist, Science Division, JPL/Caltech (2010 - present)
- Caltech post-doc fellow, Lab studies and Modeling (3286), JPL/Caltech (2007 – 2010)
- Post-doc fellow, Dept. of Physics, Univ. of Toronto, and Dept. of Chemistry, Univ. of Waterloo, Canada (2003 – 2007)
- RA/TA at ITPA, SUNY at Stony Brook (1998 – 2003)
- TA, Dept. Astronomy, Seoul Nat'l Univ., S. Korea (1996 - 1997)

Research interests

- ▶ High-resolution molecular spectroscopy in the infrared at various temperatures
- ▶ Spectral line shapes in molecular collisions and retrieval algorithm development
- ▶ Atmospheric remote sensing and radiative transfer modeling
- ▶ Mass spectrum analysis for sample purity and isotopic abundance characterization
- ▶ Application of femtosecond frequency comb laser for the Fourier transform spectroscopy

Selected peer-reviewed publications (out of 17)

- **K. Sung**, A.W. Mantz, L.R. Brown, M.A.H. Smith, T.J. Crawford, V.M. Devi, and D.C. Benner. *Cryogenic absorption cells operating inside a Bruker IFS-125HR: first results for $^{13}\text{CH}_4$ at $7\ \mu\text{m}$* . J. Mol. Spectrosc., doi:10.1016/j.jms.2010.05.004 (2010).
- O.M. Lyulin, S. Kassi, **K. Sung**, L.R. Brown, and A. Campargue. *Determination of the low energy values of $^{13}\text{CH}_4$ transitions (in the regions of the $2\nu_3$ band) near $1.66\ \mu\text{m}$ from absorption spectra at 296 and 81 K*. J. Mol. Spectrosc., 261, 91 – 100 (2010).
- L.S. Rothman, I.E. Gordon, et al., **K. Sung**, et al. *The HITRAN 2008 Molecular Spectroscopic Database*. J. Quant. Spectrosc. Radiat. Transfer, 110, 533 – 572 (2009)
- R.A. Toth, **K. Sung**, L.R. Brown, and T.J. Crawford. *Line positions and strengths of 41 bands including 10 OCS isotopologues in the $3850 - 4200\ \text{cm}^{-1}$ region*. J. Quant. Spectrosc. Radiat. Transfer, 111, 1193–1208 (2010).
- **K. Sung**, L.R. Brown, R.A. Toth, and T.J. Crawford, *FT-IR measurements of H_2O -broadened half-widths of CO_2 at $4.3\ \mu\text{m}$* . Canad. J. Phys. 87, 469 -484 (2009)
- **K. Sung**, R.A. Toth, L.R. Brown, and T.J. Crawford. *Line strength measurements of carbonyl sulfide ($^{16}\text{O}^{12}\text{C}^{32}\text{S}$) in the $2\nu_3$, $\nu_1+2\nu_2+\nu_3$, and $4\nu_2+\nu_3$ bands*. J. Quant. Spectrosc. Radiat. Transfer, 110, 2082 – 2101 (2009)
- D. Fu, **K. Sung**, C.D. Boone, K.A. Walker, and P.F. Bernath. *Ground-based solar absorption studies for the carbon cycle science by Fourier transform spectroscopy (CC-FTS) mission*. J. Quant. Spectrosc. Radiat. Transfer, 109, 2219 – 2243 (2008)

- **K. Sung**, R. Skelton, K.A. Walker, C.D. Boone, D. Fu, and P.F. Bernath. *N₂O and O₃ Arctic Column Amounts from PARIS-IR Observations: Retrievals, Characterization and Error Analysis*. J. Quant. Spectrosc. Radiat. Transfer, 107, 385 – 406 (2007)
- T.E. Kerzenmacher, et al., **K. Sung**, et al. *Measurements of O₃ and NO₂ and temperature during the 2004 Canadian Arctic ACE validation Campaign*. Geophys. Res. Lett., 32, L16S07, doi:10.1029/2005GL023032 (2005)
- **K. Sung** and P. Varanasi. *CO₂-broadened half-widths and CO₂-induced line shifts of ¹²C¹⁶O relevant to the atmospheric spectra of Venus and Mars*. J. Quant. Spectrosc. Radiat. Transfer, 91, 319 – 332 (2005)
- **K. Sung** and P. Varanasi. *Intensities, collision-broadened half-widths, and collision-induced line shifts in the second overtone band of ¹²C¹⁶O*. J. Quant. Spectrosc. Radiat. Transfer, 83, 445 – 458 (2004)
- V. Nemtchinov, **K. Sung**, and P. Varanasi. *Measurements of line intensities and half-widths in the 10 μm bands of ¹⁴NH₃*. J. Quant. Spectrosc. Radiat. Transfer, 83, 243 – 265 (2004)\

Internal technical reports

- **K. Sung**. *ACE/M: Mars lunar occultation and limb sounding*. Dept. of Chemistry, Univ. of Waterloo, July (2006)
- **K. Sung**. *Detection capability of ACE/M*. Dept. of Chemistry, Univ. of Waterloo, Aug. (2006)
- **K. Sung**. *Suggestions for the CCS-FTS operation modes*. Dept. of Chemistry, Univ. of Waterloo, Apr. (2006)
- P.F. Bernath, M. Butler, **K. Sung**, C. Boone. *Carbon Cycle Study using Fourier Transform Spectroscopy*. Phase 1 Report, Contract: 9F007-033073/001/ST Rev. 1, Univ. of Waterloo, Univ. of Waterloo, Feb. 14, (2005)