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B.Eng. (1979, Engineering Physics), McMaster Univ.; Ph.D. (1985, Astrophysical Sciences), Princeton Univ.; AT&T Bell Laboratories (1985-87); Assistant Prof.(1988-1993), Assoc. Prof. (1993-95), Professor (1995-present) Univ. of Maryland; NSERC Postgraduate Fellowship, National Research Council of Canada (1979-84); NSF Presidential Young Investigator (1988-93); APS-DPP doctoral dissertation award to students Thomas Clark (1999) and Kiyong Kim (2004); Fellow American Physical Society; University of Maryland Distinguished Scholar-Teacher (2005); APS Award for Excellence in Plasma Physics Research (2005).

### research interests

nonlinear optics, laser and optical physics, interaction of intense electromagnetic fields with atoms, ions, gases, solids, and plasmas; generation and application of coherent and incoherent short wavelength radiation., energetic particle generation

### some recent publications

- Measurement of the superluminal group velocity of an ultrashort Bessel beam pulse*  
I. Alexeev, K.Y. Kim, and H.M. Milchberg, Phys. Rev. Lett. **88**, 073901 (2002).
- Single-shot supercontinuum spectral interferometry*  
K.Y. Kim, I. Alexeev, and H. M. Milchberg, Appl. Phys. Lett. **81**, 4124 (2002).
- Single-shot measurement of laser-induced double step ionization of helium*  
K.Y. Kim, I. Alexeev, and H.M. Milchberg, Optics Express **10**, 1563 (2002).
- Hydrodynamic timescales for intense laser-heated clusters*  
E. Parra, I. Alexeev, J. Fan, K. Y. Kim, S. J. McNaught, and H.M. Milchberg, J. Opt. Soc. Am. B **20**, 118 (2003).
- Time-resolved explosion of intense laser-heated clusters*  
K.Y. Kim, I. Alexeev, E. Parra, and H.M. Milchberg, Phys. Rev. Lett. **90**, 023401 (2003).
- Self-focusing of intense laser pulses in a clustered gas*  
I. Alexeev, T. M. Antonsen, K.Y. Kim, and H.M. Milchberg, Phys. Rev Lett. **90**, 103402 (2003).
- Measurement of the average size and density of clusters in a gas jet*  
K. Y. Kim, V. Kumarappan, and H. M. Milchberg, Appl. Phys. Lett. **83**, 3210 (2003).
- Gases of exploding laser-heated cluster nanoplasmas as a nonlinear optical medium*  
K.Y. Kim, I. Alexeev, V. Kumarappan, E. Parra, T. Antonsen, T. Taguchi, A. Gupta, and H.M. Milchberg., Phys. of Plasmas **11**, 2882 (2004).
- Resonant heating of a cluster plasma by intense laser light*  
T. Taguchi, T.M. Antonsen, and H.M. Milchberg, Phys. Rev. Lett. **92**, 205003 (2004).
- Spectral redshifts in the intense laser-cluster interaction*  
K.Y. Kim, I. Alexeev, T.M. Antonsen, A. Gupta, V. Kumarappan, and H.M. Milchberg, Phys. Rev. A **71**, R011201 (2005).
- Guiding of intense laser pulses in plasma waveguides produced from efficient, femtosecond end-pumped heating of clustered gases*  
V. Kumarappan, K.Y. Kim, and H.M. Milchberg, Phys. Rev. Lett. **94**, 205004 (2005).
- X-ray spectroscopy of 1 cm plasma channels produced by self-guided pulse propagation in elongated cluster jets*  
K.Y. Kim, H.M. Milchberg, A.Ya. Faenov, A.I. Magunov, T.A. Pikuz, and I.Yu. Skobelev  
Physical Review E **73**, 066403 (2006)
- Plasma waveguides efficiently generated by Bessel beams in elongated cluster gas jets*  
H. Sheng, K.Y. Kim, V. Kumarappan, B.D. Layer, H.M. Milchberg  
Phys. Rev. E **72**, 036411 (2005).
- Observation of modulations in Lyman- $\alpha$  line profiles of multicharged ions in clusters irradiated by femtosecond laser pulses: Effect of a dynamic electric field*  
V. P. Gavrilenko, A. Ya. Faenov, A. I. Magunov, T. A. Pikuz, I. Yu. Skobelev, K. Y. Kim, and H. M. Milchberg  
Phys. Rev. A **73**, 013203 (2006)
- Clustered gases as a medium for efficient plasma waveguide generation*  
H. M. Milchberg, K. Y. Kim, V. Kumarappan, B. D. Layer and H. Sheng  
Phil. Trans. R. Soc. A **364**, 647 (2006).