

## [Selected publications and achievements \(See Vita for the complete list\).](#)

### Honors and Awards

**NSF-DMR CAREER Award**, “Optical and Phonon Interactions in Ultraviolet Nano-Structures”, 2003.

**National Research Council Fellowship**, “Phonons in Confined Wide-Bandgap Structures”, US Army Research Office/NCSU, 1997-2000.

### Book Chapters

“Raman Analysis of Wide Band Gap Nitrides; Film, Crystals, and Superlattices”, Leah Bergman, Mitra Dutta, and Robert J. Nemanich. In *Raman Scattering in Materials Science*, p. 273 (Editors: R. Merlin and W.H. Weber, Springer Verlag 2000).

“Raman Spectroscopy for Characterization of Hard, Wide-BandGap Semiconductors: Diamond, GaN, GaAlN, AlN, BN”, Leah Bergman and Robert J. Nemanich. *Annual Reviews of Materials Science*, Vol. 26. P.551 1996.

“Optical Properties of Synthetic Diamond Particles and Films”, Leah Bergman and Robert J. Nemanich. *Handbook of Optical Properties, Vol. II; Optics of Small Particles, Interfaces and Surfaces*, P. 331, Editors: R.E. Hummel and P. Wibmann, CRC Press 1996.

### Journals

“Optical transitions and multiphonon Raman scattering of Cu doped ZnO and MgZnO ceramics”, Jesse Huso, John L. Morrison, James Mitchell, Erin Casey, Heather Hoeck, Chris Walker, Leah Bergman, W. M. Hlaing Oo, and M. D. McCluskey, *Appl. Phys. Lett.* **94**, 061919 (2009).

“X-ray diffraction of Mg<sub>x</sub>Zn<sub>1-x</sub>O and ZnO nanocrystals under high pressure”, K. K. Zhuravlev, W. M. Hlaing Oo, M. D. McCluskey, J. Huso, J. L. Morrison, and L. Bergman, *J. Appl. Phys.* **106** 013511 (2009).

“Suppression of conductivity in Mn-doped ZnO thin films”, W.M. Hlaing Oo, L.V. Saraf, M.H. Engehard, V. Vhuttanandan, L. Bergman, J. Huso, and M.D. McCluskey, *J. Appl. Phys.* **105**, 013715 (2009).

“Optical properties of ZnO and MgZnO nanocrystals below and at the phase separation range”, John L. Morrison, Jesse Huso, , Heather Hoeck, Erin Casey, James Mitchell, Grant Norton, and Leah Bergman, *J. Appl. Phys.* **104**, 123519 (2008).

“The properties of ZnO photoluminescence at and above room temperature”, Xiang-Bai Chen, Jesse Huso, John L. Morrison, and Leah Bergman, *J. Appl. Phys.* **102**, 116105 (2007).

“Bandgap Engineered MgZnO Nanocrystals for Photoluminescence Applications”, Leah Bergman, Jesse Huso, and John Morrison, *Electrochemical Society, 212th Meeting*, **702**, 1328 (2007).

“Low temperature LO-phonon dynamics of MgZnO nanoalloys”, Jesse Huso, John L. Morrison, Heather Hoeck, Erin Casey, Leah Bergman, T. D. Pounds, and M. G. Norton, *Appl. Phys. Lett.* **91**, 111906 (2007).

Paper selected by the American Physical Society and the American Institute of Physics to appear in their *Virtual Journal of Nanoscale Science & Technology*, issue of 9-24-2007.  
<http://www.vjnano.org>

- “Infrared and Raman spectroscopy of ZnO nanoparticles annealed in hydrogen”, W. M. Hlaing Oo, M. D. McCluskey, J. Huso, and L. Bergman, *J. Appl. Phys.* **102**, 043529 (2007).
- “Ultraviolet Photoluminescence of MgZnO Nanoalloys”, L. Bergman, NSF-DMR Online Research Highlights Publication, 2007.  
[http://www.nsf.gov/mps/dmr/highlights/06highlights/em/0238845\\_Bergman.ppt](http://www.nsf.gov/mps/dmr/highlights/06highlights/em/0238845_Bergman.ppt)
- “Ultraviolet Photoluminescence and Raman Properties of MgZnO Nanopowders”, Leah Bergman, John L. Morrison, Xiang-Bai Chen, Jesse Huso, Heather Hoeck, *Appl. Phys. Lett.* **88**, 023103 (2006).  
Paper selected by the American Physical Society and the American Institute of Physics to appear in their *Virtual Journal of Nanoscale Science & Technology*, issue of 1-23-2006.  
<http://www.vjnano.org>
- “Pressure Response of the Ultraviolet Photoluminescence of ZnO and MgZnO Nanocrystallites”, Jesse Huso, John L. Morrison, Heather Hoeck, Xiang-Bai Chen, S.J. Jokela, M.D. McCluskey, Tsvetanka Zheleva, and Leah Bergman, *Appl. Phys. Lett.* **89**, 171909 (2006).  
Paper selected by the American Physical Society and the American Institute of Physics to appear in their *Virtual Journal of Nanoscale Science & Technology*, issue of 11-6-2006.  
<http://www.vjnano.org>
- “Dynamics of GaN Bandedge Photoluminescence at Near-Room Temperature Regime”, Xiang-Bai Chen, Jesse Huso, John L. Morrison, and Leah Bergman, *J. Appl. Phys.* **99**, 46105 (2006).
- ”Raman Scattering of Polar-Modes of ZnO Crystallites”, Leah Bergman, Xiang-Bai Chen, Jesse Huso, and John L. Morrison, *J. of Appl.Phys.* **98**, 093507 (2005).
- “Temperature response and anharmonicity of the optical phonons in GaN nanowires”, Xiang-Bai Chen, Jesse Huso, John L. Morrison, Andrew P. Purdy, and Leah Bergman, *J. Appl. Phys.* **98**, 026106 (2005).  
Paper selected by the American Physical Society and the American Institute of Physics to appear in their *Virtual Journal of Nanoscale Science & Technology*, Vol.12, Issue 5, 2005.  
<http://www.vjnano.org>
- “Ultraviolet Raman scattering of GaN nanocrystallites: Intrinsic versus collective phenomena”, Xiang-Bai Chen, John L. Morrison, Jesse Huso, Andrew P. Purdy, and Leah Bergman, *J. Appl. Phys.* **97**, 024302 (2005).
- “Photoluminescence dynamics in ensembles of wide-band-gap nanocrystallites and powders”, Leah Bergman, Xiang-Bai Chen, John L. Morrison, Jesse Huso, and Andrew P. Purdy, *J. Appl. Phys.* **96**, 675 (2004).
- “Impact of ultraviolet laser heating on the photoluminescence of ensembles of GaN microcrystallites”, L. Bergman, X-B. Chen, J. Feldmeier, and A.P. Purdy, *Appl. Phys. Lett.* **83**, 764 (2003).
- “Probing the  $\text{Al}_x\text{Ga}_{1-x}\text{N}$  Spatial Alloy Fluctuation via UV-Photoluminescence and Raman at Submicron Scale”, L. Bergman, X. Chen, D. McIlroy, and R.F. Davis, *Appl. Phys. Lett.* **81**, 4186 (2002).