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PROFESSIONAL EXPERIENCE	<p>Michigan State University, East Lansing, USA Aug 2007 – Present <i>Visiting Research Instructor</i> (Postdoctoral Position) Mentor: Professor <i>Gang Bao</i></p> <p>Carnegie Mellon University, Pittsburgh, USA Sep 2005 – Aug 2007 <i>Visiting Scholar</i> supported by Korean Research Foundation Mentor: Professor <i>David Kinderlehrer</i></p> <p>Korea Air Force Academy, Chungju, Korea Mandatary Military Service Oct 2001 – Jan 2005 <i>Full-Time Instructor</i> (First Lieutenant) Mar 2003 – Jan 2005 <i>Instructor</i> (Second Lieutenant) Mar 2002 – Feb 2003</p>
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EDUCATION	<p>Ph.D. in Mathematics Aug 2005 Seoul National University, Seoul, Korea Thesis : <i>Identification of Coefficients in Partial Differential Equations via Boundary Measurements</i> Advisor: Professor <i>Hyeonbae Kang</i></p> <p>M.S. in Mathematics Feb 1999 Seoul National University, Seoul, Korea Thesis : <i>An Inverse Problem Arising from Superconductivity Theory</i> Advisor: Professor <i>Hyeonbae Kang</i></p> <p>B.A. in Mathematics Feb 1997 Soongsil University, Seoul, Korea</p>
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RESEARCH INTERESTS	<p>My principal interest lies in applied PDE stimulated by practical application. My current research focuses on the following four themes:</p>
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- **Inverse problems:** Identification of unknown coefficients in PDE determined via boundary measurement. My current investigations concern the issues of the inverse scattering problem related to multiple frequency.
- **EM cavity problems:** Analysis of Maxwell's equations with applications in electromagnetics.
- **High stress in fiber-reinforced composites:** Gradient estimate for an elliptic equations with closely adjacent conductors.
- **Evolution of grain boundaries:** The existence of the curvature driven surface with triple junctions in three dimensions.

PUBLICATIONS

- [8] (with M. Lim), *Strong Influence of a Small Fiber on Shear Stress in Fiber-Reinforced Composites*, submitted (2009), (available at arXiv:0810.4631).
- [7] (with M. Lim) *Blow-up of Electric Fields between Closely Spaced Spherical Perfect Conductors*, COMMUNICATIONS IN P.D.E. 34, NO 10 (2009), pp. 1287 - 1315.
- [6] (with G. Bao) *On the Stability of an Inverse Problem for the Wave Equation*, INVERSE PROBLEMS 25, NO 4 (2009), 045003.
- [5] *Optimal Bound on High Stresses Occurring between Stiff Fibers with Arbitrary Shaped Cross-Sections*, J. MATH. ANAL. APPL. 350 (2009), pp. 306–312 (referred).
- [4] *Estimates for Electric Fields Blown up between Closely Adjacent Conductors with Arbitrary Shape*, SIAM J. APPL. MATH. 67, NO 3 (2007), pp. 714–730 (referred).

Mandatory Military Service as Air Force-officer: Oct 2001 – Jan 2005

- [3] (with H. Kang) *Boundary Determination of Conductivities and Riemannian Metrics via Local Dirichlet-to-Neumann Operator*, SIAM J. MATH. ANAL. 34, NO. 3 (2002), pp. 719–735 (referred).
- [2] *The Reflection of Solutions of Helmholtz Equation and an Application*, COMM. KOREAN MATH. SOC. 16, NO. 3 (2001), pp. 427–436 (referred).
- [1] (with H. Kang, K. Kwon), *Recovery of an Inhomogeneity in an Elliptic Equation*, INVERSE PROBLEMS 17, NO. 1 (2001), pp. 25–44 (referred).

WORK IN PREPARATION

- [1] (with D. Kinderlehrer), *An Approach to Local Evolution of Cellular Networks in Higher Dimension*, in preparation.

TALKS

(Contributed) *Stability for an inverse hyperbolic problem*, Joint Midwest Numerical Analysis Day and SIAM Great Lakes Numerical PDEs Spring Conference, Wayne State University, Detroit MI USA, April 17-18, 2009.

(Contributed) *On Stability for an Inverse Hyperbolic Problem*, 2008 CNA Summer School, at Carnegie Mellon University, Pittsburgh PA USA, May 29 - Jun 7, 2008.

Soap Bubble in the Tetrahedron, Applied Analysis Seminar Series, at Seoul National University, Seoul, Korea, Jun 11, 2007.

(Invited) *High Stresses in Fiber-Reinforced Composites*, International Conference on Partial Differential Equations and Applications, at Beijing Normal University, Beijing, China, May 28 - 31, 2007.

Recovery of an Inhomogeneity in an Elliptic Equation, Second Japan-Korea Joint Seminar on Inverse Problems and Related Topics, at Seoul National University, Seoul, 2001.

SELECTED HONORS AND AWARDS

Post-Doctoral Fellowship for Study Abroad, Korean Research Foundation Grant KRF-2005-214-C00184 funded by the Korean Government (MOEHRD), Sep 2005 – Aug 2007.

The Third Place Prize, *National Undergraduate Mathematics Competition*, Korean Mathematical Society, 1996.

The Forth Place Prize, *National Undergraduate Mathematics Competition*, Korean Mathematical Society, 1995.

The Third Place Prize, *National Undergraduate Mathematics Competition*, Korean Mathematical Society, 1994.

TEACHING AWARDS *The Best Teaching Assistant Award*, Mathematics Department, Seoul National University, Aug 2005.

The Excellent Professor Award, Korea Air Force Academy, 2004.

The Second Place Prize, *Teaching Competition for Professors*, Korea Air Force Academy, 2004.

TEACHING
EXPERIENCES

Michigan State University, East Lansing, USA Aug 2007 – Present

Visiting Research Instructor

Calculus I (MTH 132):

Fall 2008 : Section 2 and 15, Evaluation Score: 3.03 (Average: 3.04 and Total: 4.00)

Spring 2008 : Section 3, Evaluation Score: 3.00 (Average: 2.89 and Total: 4.00)

Fall 2007 : Section 33, Evaluation Score: 3.28 (Average: 2.94 and Total: 4.00)

Linear Algebra (MTH 309):

Spring 2009 : Section 1 Evaluation Score: 2.76 (Average: 3.14 and Total: 4.00)

Korea Air Force Academy, Chungju, Korea

Mar 2002 – Jan 2005

Full-Time Instructor

Subjects taught:

Calculus I and II

Linear Algebra

Ordinary Differential Equations

Engineering Mathematics

SERVICES

Referee for SIAM Journal on Numerical Analysis, Journal of Computational Mathematics.

CITIZENSHIP

South Korea

VISA STATUS

H-1B

REFERENCES

Professor *Gang Bao* (Mentor : Teaching and Research)

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Professor *David Kinderlehrer* (Mentor)

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Pittsburgh, PA 15213, USA *URL* :
www.math.cmu.edu/people/fac/kinderlehrer.html

Professor *Hyeonbae Kang* (Thesis Advisor)

Department of Mathematics *Phone* : +82-32-860-7622
Inha University *E-mail* : hbkang@inha.ac.kr
Incheon 402-751, Korea *URL* : people.math.inha.ac.kr/~hbkang

Professor *YanYan Li* (Research)

Department of Mathematics *Phone* : 732-445-3483
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Professor *Habib Ammari* (Research)

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