

IVAR E. REIMANIS, Ph.D.

Metallurgical and Materials Engineering Department
Colorado School of Mines
Golden, Colorado 80401
USA
TEL: (303)-273-3549
FAX: (303)-273-3057
reimanis@mines.edu

GENERAL INFORMATION

Birth Date: January 4, 1962
Citizenship: USA

PRESENT POSITION

Herman F. Coors Distinguished Professor of Ceramic Engineering, Department of Metallurgical and Materials Engineering, Colorado School of Mines, Golden, CO 80401.
8/12 – present.

Director, Colorado Center for Advanced Ceramics, Colorado School of Mines, 6/06 – present

EDUCATION

Ph.D. July 1990. Materials, University of California, Santa Barbara
M.S. December 1986. Materials Science and Mineral Engineering, University of California, Berkeley
B.S. June 1984. Materials Science and Engineering, Cornell University

PROFESSIONAL EXPERIENCE

Colorado School of Mines, Golden, Colorado
Professor of Ceramic Engineering 4/03 – present
Associate Professor of Ceramic Engineering 8/98 – 3/03
Assistant Professor of Ceramic Engineering 9/94 – 8/98

Indian Institute of Science, Bangalore, India
U.S. Fulbright sponsored visiting professor, Department of Materials Engineering.
12/06 – 4/07

University of Western Australia, Crawley, Australia
Gledden Visiting Senior Fellow, Department of Mechanical and Materials Engineering. 1/02 – 6/02

Los Alamos National Laboratory, Los Alamos, New Mexico

Technical Staff Member 10/93 - 9/94. (Ceramic Armor Program, Project Leader;
Elevated Temperature Structural Materials; Metal/Glass Sealing for Explosive
Actuators)

Postdoctoral Fellowship 1/92 - 10/93

Max-Planck-Institut für Metallforschung, Stuttgart, Germany

Postdoctoral Fellowship 9/90 - 12/91

I. B. M. Thomas J. Watson Research Center, Yorktown Heights, New York

Research Assistant 7/86 - 12/86

Summer Research Assistant 5/84 - 8/84

COURSES TAUGHT AT COLORADO SCHOOL OF MINES

Engineering Materials Systems SYGN202

Materials Engineering MT212

Materials Engineering MT272

Senior Design: Selection and Use of Materials MT466

Special Metallurgical and Materials Engineering Problems MT513

Mechanical Properties of Ceramics and Composites MT465/ML565

Inorganic Matrix Composites MT552

Design of Welded Structures and Assemblies MT586

Materials and Chemistry, Department of Energy Special Course

Ceramic Engineering MT412/ML512

Mechanical Properties of Thin Films MT598/ML598

AWARDS AND FELLOWSHIPS

Fellow, The American Ceramic Society

Dean's Excellence Award, Colorado School of Mines (2012)

United States Fulbright Grant Recipient, India (2006/2007)

Gledden Senior Visiting Fellowship, Australia (2002)

Outstanding CSM Faculty Member for MME Department, (December 1999)

Recipient of 1996 National Science Foundation CAREER Award

Los Alamos National Laboratory Large Team Distinguished Performance Award (1995)

Max-Planck-Institut Fellowship (1990 – 1991)

AFFILIATIONS AND PROFESSIONAL SERVICE

Board of Directors, The American Ceramic Society (2011 – 2014)

United States Student Fulbright National Screening Committee, Institute of International
Education, (2011-2013)

Chair of the Materials Science and Technology Programming Coordinating Committee for
MS&T11 (2010/2011)

Various associations with the American Ceramic Society (ACerS):

Associate Editor for the Journal of the American Ceramic Society (2010 – present)

Chair of the Meetings Subcommittee on Technical Programming (2009)

Meetings Subcommittee on Technical Programming (2006-2009)

Counselor for the Basic Science Division (2007-2010)
Chair for the Basic Science Division (2006/2007)
Vice-chair and Secretary for Basic Science Division (2004-2006)
Co-chair for the Basic Science Division Program (2001-2002)
Sosman Award Committee (2002)
Organizer and Chair for international symposia and conferences:
Chair for Honorary Rowland Cannon Symposium, Science of Ceramic Interfaces,
Ceramic Engineering and Science Meeting, January 2008, in Daytona Beach, FL
International Advisory Board of Ceramic Joining of the International Ceramics
Congress (CIMTEC 2006)
Co-Chair, International Symposium Explorations into Ceramic Surfaces, Grain
Boundaries and Interfaces, at the Annual American Ceramic Society Meeting, April
10 - 13 (2005), Baltimore, MD
Co-Chair of International Symposium on Joining of Ceramics at the Annual American
Ceramic Society Meeting, April 27 – 30, 2003, Nashville, TN
Program Chair for the Basic Science Division of the American Ceramic Society
Meeting for the annual meeting in 2002 (approx. 1500 papers)
Program Chair for Basic Science Division of the American Ceramic Society Meeting
for the PAC RIM IV Meeting, 2001, in Maui, HI
Co-chair for International Symposium on Joining Dissimilar Materials for the
American Ceramic Society Meeting for the annual meeting in May 2000
Chair, 6th International Conference on Functionally Graded Materials (FGM2000), held
in Estes Park, Colorado (September 10 – 14, 2000)
Chair, Engineering Foundation Conference on Mechanical Properties of Films,
Coatings, and Interfacial Composites held in Il Ciocco, Italy (May 30 - June 4, 1999)
Chair of International Ceramic Joining Symposium for the 99th Annual American
Ceramic Society held May 1-4, 1997 in Cincinnati, OH
Co-Chair of International Symposium on Functionally Graded Materials for the
Materials Research Society, held Fall 1997, Boston, MA
Chair, International Ceramic Joining Symposium for the 98th Annual American
Ceramic Society held April 14-17, 1996 in Indianapolis, IN
Co-Chair of International Symposium on Manufacture, Reliability Analysis and
Applications of Functionally Graded Materials for the 98th Annual American Ceramic
Society held April 14-17, 1996 in Indianapolis, IN
Guest Editor for *Interface Science*, special issue *Mechanics of Interfaces*, Vol. 11, No. 3,
2003
International Advisory Committee on FGM (1998-2006)
Consultant with National Academy of Sciences, National Materials Advisory Board 2001
Member of: The American Ceramic Society; Materials Research Society; Minerals,
Metals and Materials Society; The Materials Information Society
Grant Proposal Reviewer (panel and individual) for numerous government agencies
including DOE, NSF, AFOSR, and NASA (1995 – present)
On-site Expert for National Laboratory DOE/OBES program review for INL (2001) and
LBNL (2010).
Technical Reviewer for: Metallurgical Transactions, Minerals, Metals and Materials
Society Publications, Acta Materialia, Scripta Materialia (*selected as one of five Best
Reviewers for 2011*), Philosophical Magazine, Journal of the American Ceramic
Society, Materials Manufacturing and Processes, Journal of Materials Synthesis and
Processing, Engineering Fracture Mechanics, Physical Review Letters, Quarterly

Journal of Mechanics and Applied Mathematics, Journal of Applied Mechanics,
Experimental Mechanics, International Journal of Solids and Structures, International
Journal of Fracture, International Journal of Materials Research, Surface Science,
Journal of Materials Science, Journal of Chemistry and Physics of Solids, Journal of
Nuclear Materials

PUBLICATIONS – IVAR REIMANIS (~100 TOTAL ARCHIVAL PUBLICATIONS AND PATENTS)

Archival Journal Contributions (earliest to latest)

- 1 G. S. Oehrlein, I. E. Reimanis and Y. H. Lee. “Plasma-Deposited Fluorocarbon Films on Silicon Studied by Ellipsometry”, *Thin Solid Films*, 143, 269 (1986).
- 2 I. E. Reimanis, B. J. Dalgleish, M. Brahy, M. Rühle and A. G. Evans. “Effects of Plasticity on the Crack Propagation Resistance of a Metal/Ceramic Interface”, *Acta Metallurgica et Materialia*, 38, 12, 2645 (1990).
- 3 A. G. Evans, A. Bartlett, J. B. Davis, B. D. Flinn, M. Turner and I. E. Reimanis. “The Fracture Resistance of Metal/Ceramic/Intermetallic Interfaces”, *Scripta Metallurgica et Materialia*, 25, 1003 (1991).
- 4 I. E. Reimanis, B. J. Dalgleish and A. G. Evans. “The Fracture Resistance of a Model Metal/Ceramic Interface”, *Acta Metallurgica et Materialia*, 39, 12, 3133 (1991).
- 5 I. E. Reimanis. “Diffusion Bonding of Nb/Al₂O₃ Interfaces”, *Acta Metallurgica et Materialia*, 40, S67 (1992).
- 6 I. E. Reimanis. “Fracture at Nb/Al₂O₃ Interfaces”, *Scripta Metallurgica et Materialia*, 27, 12 (1992).
- 7 D. L. Tullock, I. E. Reimanis, A. L. Graham and J. J. Petrovic. “Deflection and Penetration of Cracks at an Interface Between Two Dissimilar Materials”, *Acta Metallurgica et Materialia*, 42, 9, 3245 (1994).
- 8 K. A. Rogers, K. P. Trumble, B. J. Dalgleish and I. E. Reimanis. “The Role of Oxygen in Microstructure Development at Solid-State Diffusion-Bonded Cu/ α -Al₂O₃ Interfaces”, *Journal of the American Ceramic Society*, 77 [8], 2036 (1994).
- 9 I. E. Reimanis, J. J. Petrovic and T. E. Mitchell. “The Fracture of Single Crystal Y₃Al₅O₁₂ (YAG)” *Journal of Non-Crystalline Solids* 177, 67-73 (1994).
- 10 I. E. Reimanis, M. L. Hawley, T. E. Mitchell and D. S. Zhou. “The Fracture Characteristics of Czochralski-grown Y₃Al₅O₁₂”, *Journal of the American Ceramic Society*. 78[8], 2282-2286 (1995).
- 11 A. A. Mammoli, A. L. Graham, I. E. Reimanis and D. L. Tullock. “The Effect of Flaws on the Propagation of Cracks at Bi-Material Interfaces”, *Acta Metall. Mater.* Vol. 43, No. 3, p 1149-1156, (1995).
- 12 I. E. Reimanis, J. J. Petrovic, H. Suemastu, and T. E. Mitchell. “A Crystalline Si₃N₄/Amorphous Si₃N₄ Composite”, *Journal of the American Ceramic Society*. 79[2] 395-400 (1996).

- 13 I. E. Reimanis, H. Suematsu, J. J. Petrovic and T. E. Mitchell. "Mechanical Properties of Single Crystal Si_3N_4 ", *Journal of the American Ceramic Society*. 79[8] 2065-73 (1996).
- 14 I. E. Reimanis, K. P. Trumble, K. A. Rogers and B. J. Dalgleish. "The Influence of Chemical Interphases on Crack Propagation at $\text{Cu}/\alpha\text{-Al}_2\text{O}_3$ Interfaces", *Journal of the American Ceramic Society*. 80 [2] p. 424 (1997).
- 15 I. E. Reimanis. "A Review of Issues in the Fracture of Interfacial Ceramics and Ceramic Composites", *Materials Science and Engineering A*. 237, No. 2, p. 159 (1997).
- 16 J. J. Moore, A. O. Kunrath, I. E. Reimanis, G. Mustoe, K. Upadhyaya and E. A. Levashov. "Synthesis and Application of Composite $\text{TiC-Cr}_3\text{C}_2$ Targets" *International Journal of Self-Propagating High-Temperature Synthesis*, 6, 3, 277 (1997).
- 17 J. J. Petrovic, M. I. Pena, I. E. Reimanis, M. S. Sandlin, S. Conzone, H. H. Kung, and D. P. Butt. "Mechanical Behavior of MoSi_2 Reinforced Si_3N_4 Matrix Composites", *Journal of the American Ceramic Society*. 80[12] 3070-76 (1997).
- 18 I. E. Reimanis, "The Measurement of Crack Front Profiles in the Fracture of $\text{Au}/\text{Al}_2\text{O}_3$ Interfaces", *Acta Materialia*, Vol. 46, No. 7, 2479-2484 (1997).
- 19 G. Zazzara, I.E. Reimanis. "Residual Stresses in the Failure of W--Pt--Ag Metallizations on Oxidized Si", *Surface And Coatings Technology* (111)1, 92-96 (1999.)
- 20 A. N. Winter, B. A. Corff, I. E. Reimanis and B. H. Rabin. "Fabrication of Graded Nickel-Alumina Composites with a Thermal-Behavior-Matching Process," *Journal of the American Ceramic Society* 83 [9] 2147-54 (2000).
- 21 R. D. Torres, I. E. Reimanis, J. J. Moore, and G. G. W. Mustoe. "Reaction Steps in the Combustion Synthesis of NiAl/TiB_2 Composites", *Metallurgical Transactions B*, Vol. 31B, 433-438 (2000).
- 22 C. A. Lewinsohn, P. Columbo, O. Unal, and I. E. Reimanis. "Stresses Occuring during Joining of Ceramics using Pre-ceramic Polymers" (invited paper) *Journal of the American Ceramic Society*, 84 [10] 2240-2244 (2001).
- 23 J. Chapa and I. Reimanis. "Modeling of Thermal Stresses of a Graded Cu/W Joint", *Journal of Nuclear Materials* 303, pp. 131-136, (2002).
- 24 J. Chapa-Cabrera and I. E. Reimanis. "Effects of Residual Stress and Geometry on Crack Kink Angles in Graded Composites", (invited paper) *International Journal of Engineering Fracture Mechanics*, Vol. 69, Issues 14-16, pp 1667-1678, (2002).

- 25 A. O. Kunrath, I. E. Reimanis and J. J. Moore. "Microstructural Evolution of TiC-Cr₃C₂ Composites Produced Via Combustion Synthesis", *Journal of the American Ceramic Society* Vol 85., N. 5, pp 1285-1290, (2002).
- 26 A. O. Kunrath, I. E. Reimanis and J. J. Moore, "Combustion Synthesis of TiC-Cr₃C₂ Composites" *Journal of Alloys and Compounds* Vol. 329/1-2, pp. 131-135 (2001).
- 27 W. E. Windes, J. Zimmerman, and I. E. Reimanis, "Electrophoretic Deposition Applied to Thick Metal-Ceramic Coatings", *Surface And Coatings Technology* 157, pp. 267-273 (2002).
- 28 J. Chapa-Cabrera and I. Reimanis, "Crack Deflection in Compositionally Graded Cu-W Composites", *Philosophical Magazine A*, volume 82, number 17/18, 3393-3403 (2002).
- 29 M. Peters and I. E. Reimanis. "Grain Boundary Grooving Studies in Y₃Al₅O₁₂ Bicrystals", *Journal of the American Ceramic Society* 86 [5] 870-72 (2003).
- 30 P. R. Heyliger, H. Ledbetter, S. Kim, and I. Reimanis, "Elastic Constants of Layers in Isotropic Laminates," *Journal of the Acoustical Society of America*, Vol. 114, pp. 2618-2625 (2003).
- 31 M. Rudas, M. B. Bush and I. E. Reimanis, "The Kinking Behavior of a Bimaterials Interface Crack Under Indentation Loading", *Journal of Engineering Analysis with Boundary Elements*, Vol 28, pages 1455-1462 (2004).
- 32 S. Krishnamurthy, I. E. Reimanis, J. Berger and E. Drexler, "Fracture Toughness Measurement of Chromium Nitride Films on Brass", *Journal of the American Ceramic Society* 87 [7] 1306-1313 (2004).
- 33 S. Krishnamurthy and I. E. Reimanis, "Multiple Cracking in CrN and Cr₂N Films on Brass", *Surface and Coatings Technology*, Volume 192, Issues 2-3, 291-298, (2005).
- 34 M. T. Tilbrook, I. E. Reimanis and M. Hoffman, "Finite Element Simulations of Cracks near Interfaces: Effects of Thermal, Elastic and Plastic Mismatch", *Journal of the American Ceramic Society*, 88 [10] 2833-2838 (2005).
- 35 M. T. Tilbrook, I. E. Reimanis, K. Rozenburg and M. Hoffman, "Effects of Plastic Yielding on Crack Propagation Near Ductile/Brittle Interfaces", *Acta Materialia*, Vol. 53, No. 14, 3935 - 3949 (2005).
- 36 K. Rozenburg, J. R. Berger, P. A. Martin, and I. Reimanis, "Analysis of Moiré Data for Near-Interface Cracks", *International Journal of Fracture* Vol. 143, No. 3, 207-217 (2007).
- 37 V. T. Gritsyna, Yu. G. Kazarinov, V. A. Kobayakov, I. E. Reimanis, "Radiation-induced luminescence in magnesium aluminate spinel crystals and ceramics" *Nuclear Instruments and Methods in Physics Research B*, 250 [1-2], 342-348 (2006).

- 38 K. Rozenburg, I. E. Reimanis, H.-J. Kleebe and R. L. Cook, "Chemical Interaction between LiF and MgAl₂O₄ Spinel During Sintering", *Journal of the American Ceramic Society* 90[7], 2038-2042 (2007).
- 39 I. E. Reimanis, C. Seick, K. Fitzpatrick, E. R. Fuller, and S. Landin, "Spontaneous Ejecta from β -Eucryptite Composites", *Journal of the American Ceramic Society* 90[8], 2497-2501(2007).
- 40 I. E. Reimanis and H. J. Kleebe, "Reactions in the Sintering of MgAl₂O₄ Spinel Doped With LiF" *International Journal of Materials Research*, 12, 1273-1278 (2007).
- 41 K. Rozenburg, I. E. Reimanis, R. L. Cook, and H. J. Kleebe, "Sintering Kinetics of MgAl₂O₄ Doped With LiF", *Journal of the American Ceramic Society* 91[2], 444-450 (2008).
- 42 T. Jochum, I. E. Reimanis, M. Lance and E. R. Fuller, "In-Situ Raman Indentation of Eucryptite: Characterization of the Pressure-Induced Phase Transformation", *Journal of the American Ceramic Society* 92[4], 857-863, (2009).
- 43 R. Torres, C. Lepienski, J. J. Moore and I. E. Reimanis, "Influence of the Processing Route in the Microstructure and Mechanical Properties of NiAl/TiB₂ Composites Produced by Combustion Synthesis" *Metallurgical Transactions B*, 40B, 187-195 (2009).
- 44 I. E. Reimanis and H. J. Kleebe, "A Review on the Sintering and Microstructure Development of Transparent Spinel (MgAl₂O₄)", *Journal of the American Ceramic Society*, 92[7] 1472-1480, (2009).
- 45 T. Jochum and I. E. Reimanis, "Reactions in Eucryptite-Based Lithium Aluminum Silicates", *Journal of the American Ceramic Society*, 93[6] 1591-1596, (2010).
- 46 B. Narayanan, I. E. Reimanis, E. R. Fuller and C. Ciobanu, "Elastic constants of β -eucryptite studied by density functional theory", *Phys. Rev. B* 81, 104106 (2010). DOI: 10.1103/PhysRev B.81.104106.
- 47 V.T. Gritsyna, Yu.G. Kazarinov, A.O. Moskvitin and I.E. Reimanis, Point Defects in Magnesium Aluminates Spinel Ceramics Doped with Lithium Fluoride, *Acta Physica Polonica A*, Vol. 117, 161-165 (2010).
- 48 S. Ramalingam, I. E. Reimanis, E. R. Fuller, Jr., and J. Haftel, "Slow Crack Growth Behavior of Zirconia Toughened Alumina (ZTA) and Alumina using the Dynamic Fatigue Indentation Technique", *Journal of the American Ceramic Society*, 94[2] pp. 576-583 (2011).
- 49 J. White, I. E. Reimanis, S. Menzer and G. Coors, "Diffusional kinetics of ZrO₂ sintered with Y₂O₃ and NiO", *Journal of the American Ceramic Society*, 94[7] 2030-2036, (2011).

50. B. Narayanan, A. C. T. van Duin, B. B. Kappes, I. E. Reimanis and C. V. Ciobanu, "Reactive force field for lithium-aluminum silicates with applications to eucryptite phases", *Modelling and Simulation in Materials Science and Engineering*, 20, 1, 14 pages, (2012). Available online: DOI: [10.1088/0965-0393/20/1/015002](https://doi.org/10.1088/0965-0393/20/1/015002); <http://arxiv.org/pdf/1106.3359>.
51. J. T. White, I. E. Reimanis, and J. R. O'Brien, "Solubility of NiO in Pechini-Derived ZrO₂ Examined with SQUID Magnetometry", *Journal of Materials Science*, 47, 1690 – 1696, (2012).
52. S. Ramalingam, I. E. Reimanis, and C. Packard, "Determining Activation Volume for the Pressure-Induced Phase Transformation in β -eucryptite through Nanoindentation", *Journal of American Ceramic Society* 95[6] 2051-2058, (2012).
53. J. T. White, I. E. Reimanis, J. Tong, J. R. O'Brien and A. Morrissey, "Internal Reduction of Ni²⁺ in ZrO₂ Stabilized with 10 mol % Y₂O₃ Examined with VSM and SQUID Magnetometry", *Journal of American Ceramic Society* 95[12] 4008-4014, (2012). DOI: 10.1111/j.1551-2916.2012.05441.x
54. M. Rubat du Merac, I. E. Reimanis, C. Smith, M. M. Muller, and H.-J. Kleebe, "Effect of Impurities and LiF Additive in Hot Pressed Transparent Magnesium Aluminate Spinel", *International Journal of Applied Ceramic Technology 1-16*, (2012). DOI: 10.1111/j.1744-7402.2012.02828.x
55. S. Ramalingam and I. E. Reimanis, "Effect of Doping on the Thermal Expansion of β -eucryptite Prepared by Sol-Gel Methods", *Journal of the American Ceramic Society* . 95[9] 2939-2943, (2012).
56. D. D. Osterberg, J. Youngsman, R. Uvic, I. E. Reimanis, and D. P. Butt "Recrystallization Kinetics of 3C Silicon Carbide Implanted with 400 keV Cesium Ions" *Journal of American Ceramic Society*, 96[10] 3290-3295 (2013).
57. B. Narayanan, I. E. Reimanis, H. Huang, and C. V. Ciobanu, "Radiation Effects and Tolerance Mechanism in β -eucryptite", *Journal of Applied Physics* 113, 033504 (2013). URL: <http://link.aip.org/link/?JAP/113/033504>; DOI: 10.1063/1.4775838
58. S. Ramalingam, C. Packard, and I. E. Reimanis, "In-situ Diamond Anvil Cell–Raman Spectroscopy and Nanoindentation Study of the Pressure-Induced Phase Transformation in Pure and Zinc-Doped β -eucryptite", *Journal of American Ceramic Society* 96[6] 1909-1915 (2013).
59. B. Narayanan, I. E. Reimanis, and C. V. Ciobanu, "Atomic-scale Mechanism for Pressure-induced Amorphization of β -eucryptite", *Journal of Applied Physics* 114, 083520 (2013). URL: <http://dx.doi.org/10.1063/1.4819452>
60. L. J. Palade, I. E. Reimanis, A. L. Graham, and M. Gottlieb, "Linear Viscoelastic Behaviour of Highly Crosslinked Silica Reinforced Poly(dimethyl-siloxane) Rubbers", *Materiale Plastice*, 50, 1, pp. 1 – 7, (2013).

61. L. J. Palade, I. E. Reimanis and A. L. Graham, “Complex Dielectric Relaxation Behaviour of Highly Crosslinked PDMS Networks in the Glass Transition Region: an experimental study”, *Materiale Plastice*, 50, 2, pp. 97 – 99 (2013).
62. M. Rubat du Merac, H.-J. Kleebe, M. Muller and I. E. Reimanis, “50 Years of Research and Development Coming to Fruition; Unraveling the Complex Interactions during Processing of Transparent Magnesium Aluminate $MgAl_2O_4$ Spinel”, *Feature Article, Journal of American Ceramic Society* 96[11] 3341-3365 (2013).
63. A. Morrissey, J. Tong, B. P. Gorman, and I. E. Reimanis, “Characterization of Nickel Ions in Nickel-Doped Yttria-Stabilized Zirconia”, *Journal of American Ceramic Society* 97[4] 1041-1047 (2014). DOI: 10.1111/jace.12839
64. J. T. White, I. E. Reimanis and J. R. O’Brien, “Superparamagnetic Nickel Particles in Yttria Stabilized Zirconia Prepared by Direct Reduction in Pechini Derived Solution”, *Journal of Nanoparticle Research* 16:2426 (2014). DOI 10.1007/s11051-014-2426-y
65. D. Clark, J. Tong, A. Morrissey, A. Amonsoori, I. Reimanis, and R. O’Hayre, “Anomalous Low-Temperature Proton Conductivity Enhancement in a Novel Protonic Nanocomposite”, *Phys. Chem. Chem. Phys.*, 16 (11), 5076 – 5080 (2014).
66. J. Youngsman, B. P. Gorman, I. E. Reimanis, and D.P. Butt, “Diffusion of cesium in ion-implanted β -silicon carbide”, submitted to *Journal of Nuclear Materials*, March 2014.
67. M. Adam, A.-V. Phan, I. Reimanis, and J. Berger, “Influence of Auxetic Particles on Cracks Paths”, submitted to *Mechanics Research Communications* (2014).
68. I. A. Cornejo, S. Ramalingam, J. S. Fish and I. E. Reimanis, “Food Waste as a Sustainable Source of Oxides for the Production of Glasses”, to be submitted to *Nature Materials* (September 2014)

Peer-Reviewed Archival Conference Proceedings (earliest to latest)

- 1 S. L. Shinde, I. E. Reimanis and L. C. DeJonghe. “Evolution of the Nickel/Zirconia Interface” *Ceramic Engineering and Science Proceedings* vol. (7), nos. 7-8, p. 1027 (1986).
- 2 S. L. Shinde, I. E. Reimanis and L. C. DeJonghe. “Degradation in a Thermal Barrier Coating”, *Advanced Ceramic Materials* vol. (2), 1, p. 60 (1987).
- 3 I. E. Reimanis, S. L. Shinde and L. C. DeJonghe. “Intrusion Bonding of Nickel and Zirconia”, *Ceramic Engineering and Science Proceedings* vol. (10), nos. 11-12, p. 1567 (1989).
- 4 H. S. Betrabet, S. N. S. Reddy, S. Purushothaman and I. E. Reimanis. “Spinel Formation in the Nickel-Alumina System”, *Ceramic Engineering and Science Proceedings* vol. (10), nos. 11-12, p. 1531 (1989).

- 5 I. E. Reimanis. "Contributions of Plasticity to the Fracture Resistance of a Metal/Ceramic Interface", *Materials Research Society Symposium Proceedings*, vol. (170): Tailored Interfaces in Composites, p. 39 (1990).
- 6 I. E. Reimanis, D. L. Tullock, A. L. Graham and J. J. Petrovic. "Crack Deflection at Bimaterial Interfaces", *Ceramic Transactions*, eds. A. J. Moorhead, R. E. Loehman and S. M. Johnson, Vol. 35 p. 33-42 (1993).
- 7 I. E. Reimanis, B. J. Dalgleish and K. P. Trumble. "Fracture at Cu/Sapphire Interfaces", *Ceramic Transactions*, eds. A. J. Moorhead, R. E. Loehman and S. M. Johnson, Vol. 35 p. 219-228 (1993).
- 8 I. E. Reimanis, J. J. Petrovic, H. Suematsu, T. E. Mitchell and O. S. Leung. "The Mechanical Properties of a Novel Si₃N₄-Amorphous Si₃N₄ Composite", *Materials Research Society Symposium Proceedings*, vol. 287: Silicon Nitride Ceramics, p. 499 (1993).
- 9 I. E. Reimanis, J. J. Petrovic, H. Suematsu and T. E. Mitchell. "The Mechanical Properties of Single Crystal α -Si₃N₄", in *Silicon Based Structural Ceramics*, Ceramic Trans. Vol. 42, B. W. Sheldon and S. C. Danforth, eds., American Ceramic Society, 229-236 (1995).
- 10 I. E. Reimanis, J. J. Petrovic, H. Suematsu and T. E. Mitchell. "The Fracture Behavior of a CVD Crystalline Si₃N₄/Amorphous Si₃N₄ Composite", in *Silicon Based Structural Ceramics*, Ceramic Trans. Vol. 42, B. W. Sheldon and S. C. Danforth, eds., American Ceramic Society, 277-283 (1995).
- 11 I. E. Reimanis, J. J. Petrovic, M. Pena, and H. Kung. "MoSi₂/Si₃N₄ Composites: Relationships Between Processing and Fracture Behavior", in *Processing and Fabrication of Advanced Materials IV*, edited by T. S. Srivatsan and J. J. Moore, published by The Minerals, Metals & Materials Society, Warrendale, PA, pp 903 - 914 (1996).
- 12 R. D. Torres, J. J. Moore, G. Mustoe, and I. E. Reimanis. "Evaluation of Thermal Residual Stresses Developed in a Functionally Graded Material Using the Finite Element Technique", in *Processing and Fabrication of Advanced Materials IV*, edited by T. S. Srivatsan and J. J. Moore, published by The Minerals, Metals & Materials Society, Warrendale, PA, pp. 431-438 (1996).
- 13 R. D. Torres, I. E. Reimanis, J. J. Moore, and G. W. Mustoe. "Design and Synthesis of Functionally Graded Composites: The TiB₂/NiAl System", in *Processing & Design Issues in High Temperature Materials*, edited by N. S. Stoloff and R. H. Jones, The Minerals, Metals & Materials Society, Warrendale, PA (1997).
- 14 R. D. Torres, I. E. Reimanis, G. G. W. Mustoe and J. J. Moore. "Processing and Characterization of Functionally Graded TiB₂/NiAl Produced by the Combustion Synthesis Process", published in *Ceramic Transactions, Manufacture, Reliability Analysis and Applications of Functionally Graded Materials*, American Ceramic

- Society, Vol. 76, edited by A. Ghosh, Y. Miyamoto, I. E. Reimanis, and J. J. Lannutti, pp. 47-58 (1997).
- 15 H. J. Feng, R. D. Torres, I. E. Reimanis, and J. J. Moore. "Fracture Toughness Characterization of Composites in the TiC-Al₂O₃-Al System Produced by Combustion Synthesis", in *Processing and Fabrication of Advanced Materials V*, edited by T. S. Srivatsan and J. J. Moore, published by The Minerals, Metals & Materials Society, Warrendale, PA, pp. 235-242 (1997).
 - 16 I. E. Reimanis and K. P. Trumble. "Fracture of Copper/Alumina Interfaces: the Role of Microstructure and Chemistry", in *Ceramic Microstructures '96*, pp. 823-832, Plenum Publishing Corporation, New York, NY (1997).
 - 17 J. J. Moore, A. O. Kunrath, R. Torres, I. Reimanis, G. Mustoe, K. Upadhyya, and E. Levashov. "The Design and Processing of Composite Materials Using Reaction Synthesis", *Proceedings from the Fourth International Conference on Composites Engineering*, edited by D. Hui, July 6-12 (1997).
 - 18 A. N. Winter, B. A. Corff, I. E. Remanis and B. H. Rabin, "Processing, Deformation, and Fracture of Ni-Al₂O₃ Composites with and without Graded Microstructures", *Ceramic Engineering and Science Proceedings*, v. 19, n. 4, 379-386 (1998).
 - 19 I. E. Reimanis, R. D. Torres, C. Muratore and J. J. Moore. "Using Vickers Indentation to Probe Residual Stresses in Ductile/Brittle Joints with Graded Compositions", *Materials Science Forum* 308/311, p. 849 (1999).
 - 20 A. M. Peters, I. Reimanis, J. J. Moore, B. Mishra and R. Weiss. "Cathodic Arc Evaporation of Functionally Graded chromium Nitride Thin Films for Wear Resistant and Forming Applications", *Material Science Forum* 308/311 pp. (1999).
 - 21 J. Sibold, R. Cook, K. Bader and I. Reimanis. "Porous Hexaluminate Coatings for Oxide/Oxide Composites", *Ceramic Transactions* 82 (2000).
 - 22 S. Krishnamurthy and I. E. Reimanis. "The Influence of Microstructure on the Crack Formation of CrN Coatings on Brass", *Ceramic Engineering and Science Proceedings*, Vol. 21, p. 452 (2000).
 - 23 A. N. Winter, E. D. Steffler and I. E. Reimanis. "Deformation and Fracture of Ni-Al₂O₃ Composites Captured with Phase-Shifted Moire Interferometry", *Ceramic Engineering and Science Proceedings*, Vol. 21, p. 228 (2000).
 - 24 J. Chapa, K. Rozenburg and I. E. Reimanis. "Fracture in Ductile/Brittle Graded Composites", pp. 107-111 in *Second International Conference on Processing Materials for Properties*, edited by B. Mishra and C. Yamauchi, published by TMS, Warrendale, PA (2000).
 - 25 J. Chapa, K. Rozenburg, I. E. Reimanis and E. D. Steffler. "Fracture in Ductile Brittle Graded Composites", in *Proceedings from the 6th International Conference on Functionally Graded Materials*, eds, K. Trumble, S. Sampath, K. Bowman and I. E.

- Reimanis. American Ceramic Society Ceramics Transactions, pp. 797-804, vol. 114, (2001).
- 26 I. E. Reimanis and S. Krishnamurthy. "Cracking Behavior of Graded Chromium Nitride Coatings on Bass for Wear Resistant Applications", in Proceedings from the 6th International Conference on Functionally Graded Materials, eds, K. Trumble, S. Sampath, K. Bowman and I. E. Reimanis. American Ceramic Society Ceramics Transactions, pp. 159-166, vol. 114, (2001).
 - 27 C. Milz, J. Chapa-Cabrera and I. E. Reimanis. "Design Issues for Variable Mixed Mode I/II Testing", *Ceramic Engineering and Science Proceedings*, vol. 22, No. 3, pp. 261-268 (2001).
 - 28 J. Chapa-Cabrera and I. E. Reimanis, "Crack Deflection in Layered, Graded Composites", *Proceedings from International Conference on Fracture 10*, December 3-7 (2001).
 - 29 S. J. Wheeler, J. Sibold, and I. E. Reimanis, "The Effect of Carbon on the Processing is SiC/SiCF Composites", *Ceramic Engineering and Science Proceedings, Vol. 23, Issue 2, 2002*.
 - 30 J. Stamile, J. Chapa-Cabrera and I. E. Reimanis, "Designing Joints with Graded Layers", in press in *Ceramic Transactions Vol. 138. Joining of Ceramic Materials*. Eds. C. Lewinsohn, M. Singh, and R. Loehman. ISBN # = 1-57498-153-6 (2003).
 - 31 I. Reimanis and J. Chapa, "The Strength of Functionally Graded Joints: Crack Paths and Residual Stress for Cracks Perpendicular to the Gradient", Materials Science Forum, Vols 423-425, pp. 593-598 (2003).
 - 32 I. Reimanis and J. Chapa-Cabrera, "Cracking in Graded, Layered Structures", in Applied Mineralogy Developments in Science and Technology, edited by M. Pecchio, F. R. Dias de Andrade, L. Z. D'Agostino, H. Kahn, L. M. Sant'Agostino, and M. M. M. Le Tassinari, Vol. 1, ISBN 85-98656-01-1, published by ICAM-BR, Sao Paulo, Brazil, pp. 85-88 (2004). (not peer reviewed)
 - 33 Ivar Reimanis, H.-J. Kleebe, R. L. Cook, M. Patterson, A. DiGiovanni, "Transparent Spinel Fabricated from Novel Powders: Synthesis, Microstructure and Mechanical and Optical Properties", 10th DoD Electromagnetic Windows Symposium, Little Creek Amphibious Base, Norfolk, VA, May 17-20, 2004.
 - 34 J. Matterson, I. E. Reimanis and J. R. Berger, Fracture in Nb/Al₂O₃ Particulate Composites, Ceramic Transactions, Vol. 158, Surfaces, Interfaces and the Science of Joining, ISBN 1-57498-179-X, pp. 81-90, (2005).
 - 35 H. J. Kleebe, I. E. Reimanis and R. L. Cook, "Processing and Microstructure Characterization of Translucent and Transparent Spinel Monoliths", Ceramic Transactions, Vol. 157, Characterization and Modeling to Control Sintered Ceramic Microstructures and Properties, (ed C. B. DiAntonio), John Wiley & Sons, Inc., Hoboken, NJ USA doi: 10.1002/9781118407080.ch7, pp. 61-68, (2006).

- 36 R. Cook, M. Kochis, I. Reimanis and H.-J. Kleebe, "A New Powder Production Route for Transparent Spinel Windows: Powder Synthesis and Window Properties", *Windows and Dome Technologies and Materials IX*, ed. R. W. Tustison, Proc. of SPIE, (Bellingham, WA), Vol. 5786, p. 41 –47, (2005).
- 37 I. E. Reimanis, K. Rozenburg, H.-J. Kleebe and R. L. Cook, "Fabrication of Transparent Spinel: the Role of Impurities", *Windows and Dome Technologies and Materials IX*, ed. R. W. Tustison, Proc. of SPIE, (Bellingham, WA), Vol. 5786, p. 48 - 55, (2005).
- 38 Timothy W. Casias, Hans-Joachim Kleebe, Ivar Reimanis, Dennis W. Readey, "Tailoring Open Porosity in Biphasic HAP/TCP Materials Via Vapor-Phase Transport" Proceedings of the American Ceramic Society 107th Annual Meeting, on CD ISBN 1-57498-230-3 (2006).
- 39 Ivar Reimanis, Keith Rozenburg, John Berger, Matthew Tilbrook, and Mark Hoffmann, "Numerical Simulations and Measurements of Cracks Parallel and Near Interfaces in Graded Structures", Proceedings of the 16th International Conference on Fracture, Alexandroupolis, Greece, editor, E. E. Gdoutos (2006).
- 40 Corinne E. Packard, Subramanian Ramalingam, Ivar E. Reimanis, "Indentation Study of the Pressure-Induced Phase Transformation in Beta-Eucryptite: a Candidate Material for New Transformation-Toughened Ceramics", International Symposium on Plasticity 2012 and its Current Applications Jan 3-8, 2012, San Juan, Puerto Rico.
- 41 J. A. Miller and I. E. Reimanis, "Synthesis and Microstructure Development in Yttria-Magnesia Ceramics for Infrared Transparency", Proceedings from the American Ceramic Society PACRIM Meeting, San Diego, CA June 2 – 6, 2013

Book and Magazine Contributions

- 1 I. E. Reimanis. "The Effect of Microstructure on Fracture of Metal/Ceramic Interfaces", Materials for Electronic Packaging (edited by D. D. L. Chung), Butterworth-Heinemann, Boston, MA (1995).
- 2 I. E. Reimanis. Chapter on Functionally Graded Materials, Chapter 10 in Handbook on Advanced Materials, John Wiley & Sons, Inc., Hoboken, NJ, ISBN 0-471-45475-3, (2004).
- 3 I. E. Reimanis, J. Chapa, A. N. Winter, W. Windes, and E. Steffler. "Fracture and Deformation in Ductile-Brittle Joints with Graded Structures", in Functionally Graded Materials in the 21st Century: A Workshop on Trends and Forecasts, pages 130-135, edited by K. Ichikawa, Kluwer Academic Publishers, ISBN 0-7923-7236-0 (2001).
- 4 I. Cornejo, S. Ramalingam and I. E. Reimanis, "Turning Food Waste into Glass", *Glass International* April 2014.

- 5 I. Cornejo, S. Ramalingam, J. Fish and I. E. Reimanis, "Hidden Treasures: Turning Food Waste into Glass", The American Ceramic Society Bulletin, August 2014.

Books and Conference Proceedings Edited

- 1 I. E. Reimanis, C. H. Henager, Jr., and A. P. Tomsia. Ceramic Joining, American Ceramic Society Ceramics Transactions, Vol. 77, 197 pages (1997).
- 2 A. Ghosh, Y. Miyamoto, I. E. Reimanis, and J. J. Lannutti. Manufacture, Reliability Analysis and Applications of Functionally Graded Materials, American Ceramic Society Ceramics Transactions, Vol. 76, 192 pages (1997).
- 3 K. Trumble, S. Sampath, K. Bowman and I. E. Reimanis. Proceedings from the 6th International Conference on Functionally Graded Materials, American Ceramic Society Ceramics Transactions, vol. 114, (2001).
- 4 K. S. Weil, I. E. Reimanis and C. A. Lewinsohn, Surfaces, Interfaces and Science of Ceramic Joining, American Ceramic Society Ceramics Transactions, vol. 158, ISBN 1-57498-179-X (2004).
- 5 *Developments in Strategic Materials*, contains a collection of 28 papers presented during the 32nd International Conference on Advanced Ceramics and Composites, Daytona Beach, FL, January 27-February 1, 2008, eds: Hua-Tay Lin, Kunihiro Koumoto, Waltraud M. Kriven, Edwin Garcia, Ivar Reimanis, David P. Norton.

Patents

- 1 Kenneth J. McClellan, John J. Petrovic, and Ivar E. Reimanis. "Process for Making Ceramic Bodies having a Graded Porosity", U.S. Patent 5,928,583, issued July 27, (1999).
- 2 Ivar E. Reimanis, Christopher Seick and Kyle Fitzpatrick. "Implementing a Pressure-Induced Phase Transformation in Beta-Eucryptite to Impart Toughening", U.S. Patent 7,696,116, issued April 13, (2010).
- 3 Ivar E. Reimanis and Subra Ramalingam, "Near Zero Coefficient of Thermal Expansion Beta-Eucryptite Without Microcracking", Provisional Patent Application No. 61/636,016. April 2012.
4. Ivan A. Cornejo and Ivar E. Reimanis, "Alumina-Rich Glasses and Methods for Making the Same" Provisional Patent filed May 21, 2013.
5. Ivan A. Cornejo, Ivar E. Reimanis and S. Ramalingam, "Methods of Making Glass from Organic Waste Streams", Patent Application filed for US Provisional No. 61/873,696. September 5, 2014.