Department of Materials Engineering

2001-2002 Annual Report

September 1, 2001 - August 31, 2002

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FACULTY	
Tenure-Track Faculty FTE	10.2
Auxiliary Faculty FTE	1.0
Research Faculty FTE	6.0
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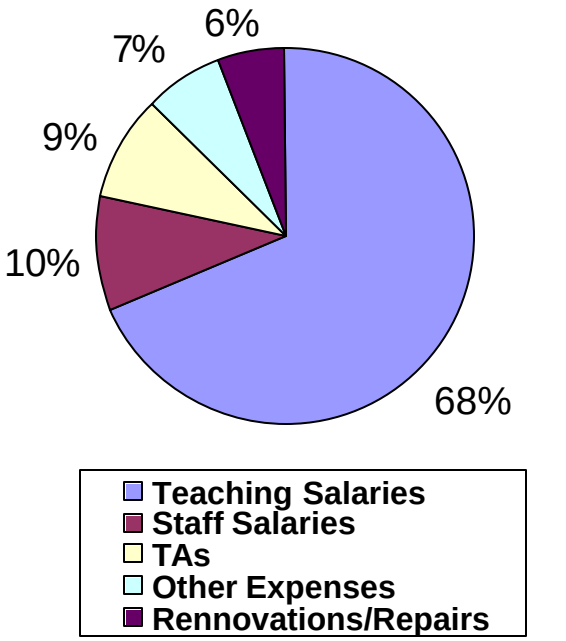
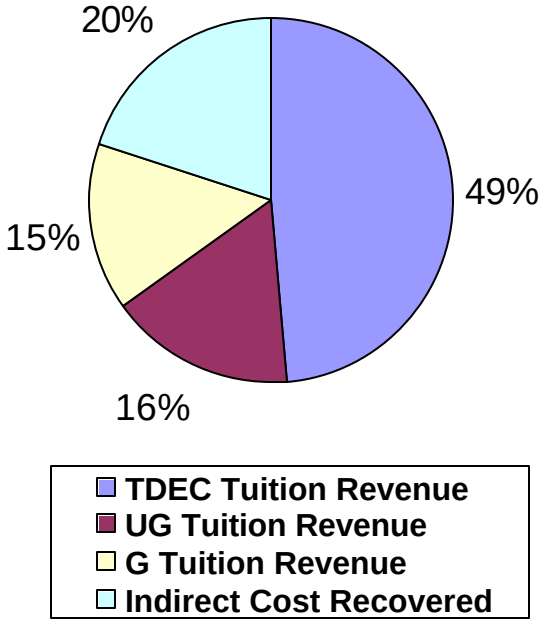
Technical Staff FTE	1.2
New Research Awards	4.9M
Research Expenditures	2.6M
Active Research Awards	7.9M
% TT Faculty with Federal Funding	80%
Books, Chapters, Editorials	7
Refereed Journal Publications	54
National Awards Won by Faculty	9
University Awards Won by Faculty	5
UNDERGRADUATE STUDENTS	
Total Undergraduate Students	59
B.S. Awarded (00-01)	19
National Awards	10
University Awards	7
Scholarships Won	23K
GRADUATE STUDENTS	
Total Graduate Students	59
Domestic Graduate Students	20
M.S. Awarded (00-01)	9
Ph.D.'s Awarded (00-01)	1
National Awards	14
University Awards	8

FY '02 Total Expenses: $1.3M



FY '02 Total Revenues: $2.9M



Annual Report 2002

1.0 Introduction

The mission of the Department of Materials Engineering is to produce B.S./M.S./Ph.D. graduates who can excel in leadership positions in industry and academia at the national and international levels. The goal of the department is to be ranked in the top ten Materials Science and Engineering undergraduate and graduate programs by US News and World Report.

Note from the Department Head

2001-2002 has been a banner year for the Materials Engineering department. We passed the ABET accreditation with flying colors, inducted several accomplished alumni and friends into our Visiting Advisory Board and held our first annual meeting with this new board in May, 2002. Our recruitment efforts for attracting the best students into our undergraduate and graduate programs are beginning to pay off as we have a highly promising group of students entering both programs this fall. Our current students (and faculty) are truly putting their best foot forward in research and academics. During the past year, our faculty and students have won a total of 52 university, national, and international awards for excellence in teaching and research activities. In research, our faculty made impressive strides in attracting major new grants. The total new grants awarded increased to roughly $5.0M (from about $2.9M in the previous year). Furthermore, only four months into the current fiscal year, we have already exceeded this $5.0M in new grants. As we forge into another academic year, we are looking forward to a sustained growth of our research enterprise, while continuing to attract the best talent to our program and are confident that 2002-2003 will blossom into a fruitful year.

1.1 Faculty and Staff

- **Michel Barsoum (Ph.D., MIT), Distinguished Professor**
- **Roger Doherty (D.Phil., Oxford, UK), Professor**
- **Yury Gogotsi (Ph.D., Kiev Polytechnic, Ukraine) Professor**
- **Surya Kalidindi (Ph.D., MIT), Department Head and Professor**
- **Frank Ko (Ph.D., Georgia Tech.), Professor**
- **Alan Lawley (Ph.D., U. Birmingham, UK), A. W. Grosvenor Professor, Fellow of the National Academy of Engineering**
- **T. S. Venkataraman (Ph.D., WPI), Professor**
- **Wei-Heng Shih (Ph.D., Ohio State), Associate Professor**
- **Antonios Zavaliangos (Ph.D., MIT), Associate Professor**
- **Christopher Li (Ph.D., University of Akron), Assistant Professor**

- **Michele Marcolongo (Ph.D., U of Pennsylvania), Assistant Professor**
- **Jeffrey Waldman (Sc.D., MIT), Instructor**
- **John DiNardo, Affiliated Faculty, Professor of Physics and Atmospheric Sciences**
- **Cato Laurencin, Affiliated Faculty, Helen I. Moorehead Distinguished Professor of Chemical Engineering**
- **Yen Wei, Affiliated Faculty, Professor of Chemistry**
- **Maggie Wheatley, Affiliated Faculty, Professor of Biomedical Engineering and Science**
- **Anthony Lowman, Affiliated Faculty, Associate Professor of Chemical Engineering**
- **Giuseppe Palmese, Affiliated Faculty, Associate Professor of Chemical Engineering**
- **Jaydev Desai, Affiliated Faculty, Assistant Professor of Mechanical Engineering**
- **Riad H. Gobran (Ph.D.), Research Professor**
- **Richard Knight (Ph.D., Loughborough, UK), Research Professor**
- **Wan Shih (Ph.D., Ohio State), Research Associate Professor**
- **Amotz Geshury (Ph.D., North Carolina State University), Research Assistant Professor**
- **Nina Orlovskaya, (Ph.D., Ukrainian Academy of Sciences), Research Assistant Professor**
- **Anisur Rahman (Ph.D., Drexel), Research Assistant Professor**
- **Judy Trachtman, Educational Programs and Accounts Coordinator**
- **Marcie Adams, Secretary**
- **Jennifer Wright, Research and Publicity Coordinator**
- **Dustin Doss, Technical Staff**
- **Stephanos Karas, Technical Staff (Part-time)**
- **Mitch Marmel, Technical Staff**
- **John McKelvie, Technical Staff**
- **David Von Rohr, Technical Staff**
- **Suleyman Saritas (Ph.D.), Visiting Professor (Middle East Technical University)**
- **Alexander Sedmak (Ph.D.), Visiting Professor (University of Belgrade)**
- **Roger Corneliussen, Emeritus Professor**
- **Ihab Kamel, Emeritus Professor**
- **Jack Keverian, Emeritus Professor**
- **Samuel K. Nash, Emeritus Professor**
- **Harry C. Rogers, Emeritus Professor**

Marcie Adams, secretary, ended her appointment in December 2001. She has subsequently relocated to the Office of Research and Graduate Studies.

Richard Knight, previously a Research Professor in the Department, began an annual appointment as Lecturer in the department on July 1, 2002. He will spearhead the Materials Engineering portion of the TDEC courses.

Christopher Li, recruited from the Department of Polymer Science at the University of Akron in AY 2000-2001, officially began his appointment in January of 2002. Prof. Li

teaches and conducts research in the area of solid-state physics & chemistry of polymeric materials.

Anisur Rahman, Research Assistant Professor, ended his appointment in June 2002. He is currently employed with the Strike Fighter/Attack A/C Strength Branch of the Navy.

Jeffrey Waldman, lecturer, completed his annual appointment on August 1, 2002. He is currently employed at Navmar Applied Sciences.

Jennifer Wright, Research Coordinator, was hired full time in January 2002. Jennifer moved to the Dean's office in early September to become the Research and Special Programs Coordinator for the college.

2.0 Education Activities

2.1 Teaching Loads

The table below presents a summary of the courses taught per faculty member in the department, the number of credit hours per course, and the total number of student's enrolled per course. Please note: Sections have been merged per instructor and the total enrolled reflects a combination of sections.

Teaching Load AY 2001-2002					
Fall Term					
Subj. Code	**Crse Numb**	**Credit Hrs**	**Enrl**	**Instructor**	**Course Title**
MATE	100	2	71	Waldman, Jeffrey	Materials, Technology, & Man
MATE	100	2	180	Lawley, Alan	Materials, Technology, & Man
MATE	100	2	150	Marcolongo, Michele	Materials, Technology, & Man
MATE	240	4	13	Shih, Wei-Heng	Thermo & Kinetics Matls I
MATE	270	4	18	Li, Chris	Advanced Materials
MATE	345	0	32	Shih, Wei-Heng	Ceramics II-Proc & Prop
MATE	360	3.5	1	Lawley, Alan	Metals I
MATE	370	3	13	Kalidindi, Surya	Mechanical Properties I
MATE	400	3	27	Zavaliangos, Antonios	Materials Engineering Design I
MATE	491	2	15	Gogotsi, Yury	Senior Project Design I
MATE	495	3	13	Twardowski, Thomas	Polymers I
MATE	500	3	7	Doherty, Roger	Struct & Props of Metals
MATE	501	3	15	Li, Chris	Structure and Properties
MATE	515	3	14	Doherty, Roger	Exper Techniq In Matls

MATE	580	1.5	10	Kalidindi, Surya	Mechanical Properties I
MATE	580	3	60	Marcolongo, Michele	Biomedical Materials I
MATE	699		3	Kalidindi, Surya	Independent Study and Research
MATE	897		18	Kalidindi, Surya	Research
MATE	898		4	Kalidindi, Surya	Master's Thesis
MATE	998		3	Kalidindi, Surya	Ph.D. Dissertation
TDEC	111	3	466	Venkataraman, T	Phys Fndns of Engr I
TDEC	140	3	83	Venkataraman, T	Calc & Phys Practicum Engrs I
TDEC	211	3	243	Barsoum, Michel	Materials I
TDEC	211		62	Li, Chris	Materials I
Winter Term					
MATE	101	4	21	Waldman, Jeffrey	Fundamentals of Materials
MATE	130	4	14	Waldman, Jeffrey	Materials Laboratory I
MATE	245	4	9	Shih, Wei-Heng	Thermo & Kinetics Matl II
MATE	270	4	26	Gogotsi, Yury	Advanced Materials Laboratory
MATE	315	4.5	24	Zavaliangos, Antonios	Polymers II--Processing
MATE	340	4	24	Barsoum, Michel	Fundamentals of Ceramics
MATE	366	4.5	30	Doherty, Roger	Metals II
MATE	410	3	14	Lawley, Alan	Materials Engr Design II
MATE	472	3	54	Marcolongo, Michele	Mechanical Properties II
MATE	492	2	15	Gogotsi, Yury	Senior Project Design II
MATE	499		2	Kalidindi, Surya	Independent Study
MATE	510		16	Doherty, Roger	Thermodynamics of Solids
MATE	580	3	22	Marcolongo, Michele	Mechanical Properties II
MATE	699		4	Kalidindi, Surya	Independent Study & Research
MATE	897		14	Kalidindi, Surya	Resesarch
MATE	898		6	Kalidindi, Surya	Master's Thesis
MATE	998		5	Kalidindi, Surya	Ph.D. Dissertation
TDEC	113	3	299	Venkataraman, T	Phys Fndns Of Engr II
TDEC	141	1	94	Venkataraman, T	Calc & Phys Practicum Engrs II
TDEC	212	1.5	63	Waldman, Jeffrey	Materials II
TDEC	212	1.5	50	Zavaliangos, Antonios	Materials II
TDEC	212	1.5	34	Knight, Richard	Materials II
TDEC	212	3	266	Lawley, Alan	Materials II

Spring Term					
MATE	100	2	13	Kalidindi, Surya	Materials Technology and Man
MATE	101	4	24	Lee, Eui	Fundamentals of Materials
MATE	460	0	16	Zavaliangos, Antonios	Engr Computational Lab
MATE	460	4	16	Zavaliangos, Antonios	Engr Computational Lab
MATE	493	4	15	Gogotsi, Yury	Senior Project Design III
MATE	499		3	Kalidindi, Surya	Independent Study
MATE	501	3	13	Li, Christopher	Struct & Props Polymers
MATE	580	3	11	Zavaliangos, Antonios	Numerical Methods
MATE	580	3	16	Marcolongo, Michele	Biosurfaces
MATE	580	3	10	Shih, Wei-Heng	Ceramic Processing
MATE	580	3	10	El-Sherif, Mahmoud	Optical/Smart Materials
MATE	580	3	15	Gogotsi, Yury	Intro to MEMS and Nanotech
MATE	610	3	2	Kalidindi, Surya	Mechanical Behavior of Solids
MATE	699		2	Kalidindi, Surya	Independent Study and Research
MATE	897		11	Kalidindi, Surya	Research
MATE	898		5	Kalidindi, Surya	Master's Thesis
MATE	998		5	Kalidindi, Surya	Ph.D. Dissertation
TDEC	115	3	259	Venkataraman, T	Phys Fndns Of Engr III
TDEC	142	1	84	Venkataraman, T	Calc & Phys Practicum Engrs III
TDEC	211	3	268	Doherty, Roger	Materials I
TDEC	232	0	53	Waldman, Jeffrey	Eval/Pres Exper Data II
Summer Term					
MATE	699		4	Kalidindi, Surya	Independent Study and Research
MATE	897		15	Kalidindi, Surya	Research
MATE	898		3	Kalidindi, Surya	Master's Thesis
MATE	998		2	Kalidindi, Surya	Ph.D. Dissertation
TDEC	212	3	282	Lawley, Alan	Materials II
TDEC	232	0	79	Waldman, Jeffrey	Eval/Pres Exper Data II
TDEC	232	0	84	DiNardo, J	Eval/Pres Exper Data II

2.2 Teaching Awards

- **Yury Gogotsi** was listed in Who's Who in America, 2002; Who's Who Among America's Teachers, 2002; Who's Who in the World 2002; 2000 Outstanding Scientists of the 21st Century; and Who's Who in Engineering Education, 2002.
- **Surya Kalidindi** was listed in 2000 Outstanding Scientists of the 21st Century, 2002; Who's Who Among America's Teachers, 7th Edition, 2002; Who's Who in Engineering Education (WWEE), 2002, and in Marquis Who's Who in Science and Engineering, 2002-2003.
- **Alan Lawley**, A.W. Grosvenor Professor, was the recipient of the 2002 Educator Award of the Minerals, Metals & Materials Society (TMS). Lawley was presented with this award at the annual TMS meeting in Seattle, Washington in early February. He also received the Adolph Schaefer Special Achievement Award from the ASM International Liberty Bell Chapter, 2002.
- **Jamie Ostroha,** graduate student and president of MAGNET, won a Teaching Assistant Excellence Award for her work on the t-DEC 212 course.

2.3 Student Awards and Honors

2.3.1 Undergraduates

Beth Carroll

- ASM International ® Foundation Scholarship, 2002, $1000
- ASM International ® Liberty Bell Chapter Scholarship, 2002, $1500
- Outstanding Co-operative Education Senior Award, Drexel University, 2002
- Lewis A. Caccese Scholarship from Philadelphia Engineering Foundation, 2002, $1000
- Harry E. Muchnic Scholarship, 2002, $2000

Ethan Hackett

- ASM International ® Liberty Bell Chapter Scholarship, 2002, $1500
- William G. Smith Scholarship, $800

Elizabeth Hoffman

- ASM International ® Liberty Bell Chapter Scholarship, 2002, $1500
- Andrew Hemphill Dill Scholarship, $1635
- College of Engineering 1907

Daniel Penrose, Brenton Woods, & Brandon McWilliams

- Recipients of Grosvenor Scholarships, $1450

Daniel Stiles

- Clayton Family Scholarship for Studies in Powder Metallurgy, awarded by the Center for Powder Metallurgy Technology (CPMT) in September 2001. This

award, in the amount of $4,000.00 helped Stiles to create and carry out the research for his senior design project.

Steven Szewczyk

- Michael Koczak Scholarship, $500
- ASM International ® Liberty Bell Chapter Scholarship, April 2002, $1500

Alex Tsurikov

- H.H. Harris Foundation Award, July 2001. $2250.00
- A.W. Grosvenor Award presented by the ASM International ®Liberty Bell Chapter, August 2001. Award amount $1500.00

2.4 List of Graduates

Ph.D. Degrees:

Ayman A. Hussien Salem, "Strain Hardening of Titanium: Role of Deformation Twinning." Supervising Professors: Surya Kalidindi, Roger Doherty

M.S. Degrees

Linh H. Ho-Duc
Hoa Le Lam
Naveen S. Naidu
Jamie Lyn Ostroha
Gwenaelle Proust
Brent Smith
Jonathan Thomas
John Travaglini
Greg Booker

B.S. Degrees

Jack Xuong-Chi Ciang
Brian Connolly
David Keith Heldt
Linh H. Ho-Duc
Elizabeth Hoffman
Amber Marie Kuhn
Scott McNamara
Martin R. Mee
Jamie Lyn Ostroha
Jennifer L. Pearlman
Daniel Vincent Penrose
Maria Pia Rossi
Daniel J. Stiles
Alfred E. Stuart III
Gwen A. Taschner
Jonathan D. Thomas
Aleksey Victor Tsurikov
Craig William Wentz
Brenton L. Woods

3.0 Research Activities

3.1 New Research Grants

During the fiscal year ending June 30, 2002 the Department of Materials Engineering submitted 76 proposals valued at $37,603,518.00 and had 76 total active grants with a project-to-date budget of $7,873,507.99. During the fiscal year ending June 30, 2002, the Department received 51 new awards valued at $4,940,764.00. The 51 new awards are listed below (please note that a few have been merged, so less than 51 appear):

PI	Sponsor	Project Title	Amount
Barsoum, Michel	National Institute of Standards and Technology	The Influence of Additives on Copper Electrodeposition For On-Chip Interconnections	33,000
Barsoum, Michel	National Institute of Standards and Technology	Electrochemical Properties of Copper Single Crystal Faces in Room-Temperature AICI3-MeEtim	33,000
Barsoum, Michel	Army Research Office	Micromechanical Origins and Design Implementations of Damage Tolerance in Ti3SiC2	105,000
El-Sherif, Mahmoud	Ben Franklin Technology Partners	Fiber Optics and Photonics Manufacturing Engineering - FY02	30,000
Gogotsi, Yury	Nanotechnology Institute	Acquisition of a Near-Field and UV Raman Microscope	100,000
Gogotsi, Yury	National Science Foundation	Carbon Nanopipes for Nanofluidic Devices and In-situ Fluid sites	1,700,305
Gogotsi, Yury	NATO	Silicon Carbide/Carbon Nanocomposities based on Nanodiamond and Carbon Onions	6,523
Gogotsi, Yury	NATO	Advanced Research Workshop on Nanostructured Materials & Coatings for Biomedical	21,862
Gogotsi, Yury	SSG Precision Optronics, Inc.	Development of BAN coating for SiC Fibers	20,000
Gogotsi, Yury	Electrodes International	Testing and Characterization of Titanium-lead Materials	19,000
Gogotsi, Yury	National Science Foundation	Acquisition of a Near-Field and UV Raman Microscope	297,200
Gogotsi, Yury	National Science Foundation	Phase Transformations in Ceramics & Semiconductors	239,778
Gogotsi, Yury	National Science Foundation	SGER: In-Situ Investigation of Fluid Processes in a Carbon Nanotube	6,000
Gogotsi, Yury	Department of Energy	A New Class of Carbon Materials: Graphite Polyhedral Crystals	425,000
Kalidindi, Surya	Air Force Office of Sponsored Research	A Planning Grant for a Mini-School on Microstructure Sensitive Design	40,000
Kalidindi, Surya	Brigham Young U	Microstructure-Sensitive Design: A Quantitative Approach to New Materials Development	80,000

Knight, Richard	DuPont	Thermal Spray Corrosion Barrier Coating Deposition and Characterization	5,930
Knight, Richard	Hewlett Packard	Plasma Spray of Yttria-Stabilized Zirconia Coatings	7,136
Knight, Richard	DuPont	Thermal Spray Corrosion Barrier Coating Deposition and Characterization	11,855
Knight, Richard	Ansell Perry, Inc	Thermal Spray Deposition of Coatings on Glove Formers	23,061
Knight, Richard	Ben Franklin Technology Partners	Center for the Plasma Processing of Materials-FY02	10,000
Knight, Richard	D E Technologies	VPS Pehnium on Graphite Novel Insert	2,162
Knight, Richard	Pratt &Whitney	HVOF Spraying of PMR-15 Panels	13,132
Knight, Richard	Chameleon Optics., Inc.	Electrochromatic Window Film	10,000
Knight, Richard	Albany International Research Co.	Feasibility Study: Thermally Sprayed Polymeric Barrier Coating for Gloss Belts	14,005
Knight, Richard	National Science Foundation	Feasibility Study on High Yield Thermal Plasma Synthesis of Carbon Nanotubes and Other Novel Carbon Forms	100,000
Ko, Frank	Army Research Office	Gradient Composite for Armor Vehicles-Feasibility Study	30,000
Ko, Frank	BFTP Industry Match-FY01	Center for Textile Structure Composites	33,170
Ko, Frank	Ben Franklin Technology Partners	Center for Textile Composites	47,500
Ko, Frank	University of N. Carolina	Science and Technology of New Carbon Nanotube-Based Composites	157,625
Ko, Frank	Utility Development Co.	Advanced Lightweight NBC Protective Clothing	199,998
Li, Christopher	American Chem. Society	Towards Tunable Ordered Structures and Habits Through Self-Organized Folding	35,000
Orlovskaya, Nina	National Energy Tech. Lab.	Thin Perkovskite Coatings for the Interconnect Materials-SOFC Interconnect Improvement	88,710
Orlovskaya, Nina	Air Force Office of Science Research	Residual Stresses in Ceramic Laminates	49,995
Orlovskaya, Nina	American Association for the Advancement of Science	TEM Study of Ferroic LaCoO3 Based Perovkites	4,000
Rahman, Anisur	Federal Aviation Ad.	Modeling and Analysis of Crack Growth and Damage Progression in	68,002
Shih, Wan	Environmental Protection Agency (EPA)	Ultrasensitive Pathogen Quantification in Drinking Water Using Piezoelectric Microcantilever	400,000
Shin, Wan	National Science Foundation	Femtogram Biomolecular Recognition Using Piezoelectric Cantilevers	99,929
Shih, Wei	Johnson Matthey	Effects of Small Organic Molecules on the Morphology and Thermal	54,775

Twardowski, Thomas	Rutgers University	Biodegradable Polymeric Products	30,000
Zavaliangos, Antonios	National Science Foundation	International Cooperative Research: Anisotropy in Shrinkage During Sintering	18,335
Zavaliangos, Antonios	National Science Foundation	GOALI	269,776
Materials Engineering		***51 Awards***	***4,940,764***

3.2 Industrial Interactions

Chris Li

- Received as a donation a differential scanning calorimetry (DSC) and a dynamic mechanic analysis (DMA) instrument from Perkin-Elmer Company. Both instruments are used one and the total value is about $60 K.

Rick Knight

- Daikin Inst. Advanced Technology, Orangeburg, NY, $20k
- Albany International, Inc., Mansfield, MA. $14K to date, additional work proposed
- Chameleon Optics, Phila., PA - Phase I SBIR, $30K to Drexel
- Apogee, Inc., > $100K, DoE Pass-Through [With raj Mutharasan, Chem E]
- Du Pont, DE. ~$18K during the last year.
- Nanophase, Inc., Romeoville, IL, $20.5K
- Ansell Healthcare, ~$15K during last year, more over course of program.
- Pratt & Whitney, East Hartford, CT, $13K
- DE Technologies, King of Prussia, PA. $5.5K
- Hewlett Packard, $7.1K
- Exotherm Corp, Camden, NJ
- Green Tweed - discussions ongoing

3.3 Research Awards and Honors

Beth Carroll

- Undergraduate Student Research Award, Materials Engineering Dept., Drexel, May 2002
- Undergraduate Materials Research Initiative Grant from MRS, 2001, $1000
- UMRI Best Poster award from the MRS Spring Meeting, 2002, $100
- Drexel/MCPHU Research Day, Undergraduate Best Poster Award, 2002, $500

Svetlana Dimovski

- Nikolitch Trust Scholarship Award from Studenica Foundation, (2002), $8000
- Amelia Earhart Fellowship Award, Zonta International (2002), $6000

- The Electrochemical Society Student Poster Session Award (The first place in Solid State Science and Technology), Philadelphia, PA (2002), $250
- Graduate Student Research Award from the College of Engineering, Drexel University, Philadelphia, PA (2002)
- The MRS Outstanding Poster Award, MRS Fall Meeting, Boston, USA (2001), $500

Roger Doherty

- (With Suleyman Saritas and Alan Lawley) Awarded the Outstanding Technical Paper of 2000-2001 International Conference on Powder Metallurgy and Particulate Materials for "Effect of Porosity on The Hardening of P/M Steels" The award was presented in May 2002.

Yury Gogotsi

- S. Somiya Award from the International Union of Materials Research Societies, 2002
- G. C. Kuczynski award from the International Institute for the Science of Sintering, 2002
- Elected Full Member of the International Institute for the Science of Sintering, 2002
- 10^6 Club of Drexel University, 2002.
- Faculty Research Achievement Award from Drexel University, 2002

Emily Ho

- Dean's Award, College of Engineering, Research Day 2001, $250

Milan Ivosevic

- Graduate Student Association (GSA) award, 2002, trip to Germany to present a paper at International Thermal Spray Conference - ITSA 2002 [March 3rd] – Air ticket cost ($600)
- International Thermal Spray Association (ITSA) postgraduate scholarship, $1500
- 1st Place ASM International ® Graduate Student Poster Contest on April 18, 2002, $500
- Drexel/MCPHU Research Day, Graduate Best Poster Award, 2002, $500

Thomas Juliano

- National Defense Science and Engineering Graduate Fellowship, 2002, 3 year fellowship covering stipend and tuition at $24,000/year
- National Science Foundation Graduate Fellowship Honorable Mention, 2002
- Member of United States Achievement Academy, 2002
- George Hill Endowed Fellowship, Drexel University, 2001, $5000

Nevin Naguib

- 2nd Place ASM International ® Liberty Bell Graduate Chapter Poster Competition, April 2002, $200
- September 2002 - Dean's Fellowship Recipient: Drexel University covering half of the cost of tuition
- September 2001 - Koerner Fellowship Recipient: Drexel University, $1500/month for 10 months
- September 2001 - National Collegiate Award Winner in Materials Engineering.
- September 2001-Present - Dean's List, President's List, and National Honor Key Society Award.

Ayman Salem

- National Collegiate Engineering Award
- 2001 TMS Outstanding Student Paper Contest

Jonathan Thomas

- 3rd Place ASM International ® Liberty Bell Chapter Graduate Student Poster Award, $100
- Elected as a Director of the ASM International ® Liberty Bell Chapter for the period of 2002-2004. Thomas is the first graduate student in the history of the Liberty Bell Chapter to hold this position.

3.4 Major Publications

3.4.1 Books, Chapters, Editorials

1. **Y. Gogotsi**, J.A. Libera, M. Yoshimura, Chapter 8: "Hydrothermal Synthesis of Carbon Nanotubes," in *Fundamentals of Carbon Nanotube and the Front Line of Their Industrialization*, pp. 241-254 (NTS, 2001) (in Japanese)

2. **F. K. Ko** "Braiding," *Handbook, Volume 21, Composites,* ASM International ®, pp.69-77, (December 2001).

3. **A. Lawley**, "Atomization," *Encyclopedia of Materials: Science and Technology*, Elsevier Science, Ltd., Oxford, UK, vol. 1, p. 387, (2001).

4. **A. Lawley**, "Powder Metallurgy," *McGraw Hill Encyclopedia of Science and Technology, Ninth Edition*, McGraw Hill, New York, NY, vol. 14, p. 271, (2002).

5. **C. Y. Li**, and S. Z. D. Cheng, "Semicrystalline Polymers," *The Encyclopedia of Polymer Science and Technology*, John Wiley & Sons, 2002.

6. N. Hickok, J. Purtill, **M. Marcolongo**, R.S. Tuan, "Biological Fixation in Hip Replacement," *Hip Replacement: Current Trends and Controversies* (Ed. R.K. Sinha), Marcel-Dekker, Inc., 137-176, (2002).

7. **T. S. Venkataraman** and Donald H. Thomas. *Physical Foundations of Engineering - Applications and Resource Book*,. VI Edition, John Wiley Publishers, (September 2002.)

8. **T. S. Venkataraman,** N. John DiNardo and Irvin A. Miller *Undergraduate Physics Laboratory Manual- 2001 Edition*, John Wiley Publishers, (September 2001.)

9. **A. Zavaliangos**, T. Veena, O. Eugene, *Modeling and Numerical Simulation of Materials Behavior and Evolution*, vol 731, MRS, Warrendale, PA, 320 pages, (2002).

3.4.2 Refereed Journal Publications

1. A. Bhattacharyya, E. El-Danaf, **S. R. Kalidindi**, **R. D. Doherty**, "Evolution of Grain-Scale Microstructure During Large Strain Simple Compression of Polycrystalline Aluminum with Quasi-Columnar Grains: OIM Measurements and Numerical Simulations," *International J. of Plasticity*, **17**, 861-883 (2001).
2. E.El-Danaf, **S. R. Kalidindi**, **R. D. Doherty**, "Influence of Deformation Path on the Strain Hardening Behavior and Microstructure Evolution in low SFE FCC Metals," *International J. of Plasticity*, **17**, 1245-1265 (2001).
3. S. Saritas, **R. D. Doherty**, **A. Lawley**, "Effect of Porosity on the Hardenability of P/M Steels," *International J. of Powder Metallurgy*, **38**, 31-40 (2002).
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4.0 Service Activities

4.1 Service to Profession

Michel Barsoum: Reviewer? *Journal of the American Ceramics Soc*.; *Nature*; *Metallurgical and Materials Transactions*; National Science Foundation - Division of Materials Research; Materials Research Soc.*; J. Applied Physics*; *Appl. Phys. Letters*

Roger Doherty: Journal Reviewer? *Acta Mater.; Scripta Mater; Metal. Trans.; Mater. Sci. and Eng; Int. J of Powder Met.; Phil. Mag.; Modeling and Simulation; J of Materials Res.*; **Proposal Reviewer—**National Science Foundation; Participant (invited)? Materials Science for Advanced Space Propulsion: A Planning Workshop? October 9-10, 2001 in Huntsville, Alabama.

Yury Gogotsi: Editorships/Editorial Boards? *Journal of Materials Processing and Manufacturing Science*, since 1997; *Advances in Technology of Materials and Materials Processing Journal (ATM)*, since 1998; *Reviews in Advanced Materials Science*, since 1999; *Materials Physics and Mechanics*, since 2000.;
Conference Chair/Organizer? **Director**? NATO Advanced Research Workshop on Nanostructured Materials for Biomedical and Sensor Applications, Kiev, Ukraine, August 4-8, 2002; **Member of the International Advisory Committee** of Section B of the International Ceramics Congress CIMTEC 2002, Florence, Italy, July 2002. **Session Chair/Organizer**? 2002 International Conference Solvo-Thermal Reactions, New Brunswick, NJ, July 2002; NATO Advanced Research Workshop on Nanostructured Materials for Biomedical and Sensor Applications, Kiev, Ukraine, August 4-8, 2002. **Proposal Reviewer**? National Science Foundation (SBIR panel review and single proposals); Petroleum Rsearch Fund; US Civilian Research and Development Foundation; Research Grants Council, Hong Kong; National Research Council; Israel Science Foundation; **Journal Reviewer?** *Nature; Solid State Ionics* (3 papers); *Carbon* (3 papers); *Applied Physics Letters* (2 papers); *J. American Ceramic Society; J. Materials Research (2 papers) J. Materials Processing and Manufacturing Science; ASME J. Engineering Materials and Technology; Applied Surface Science; J. European Ceramic Society; NanLetters (2); International Journal of Powder Metallurgy; Journal of Alloys and Compounds.* **Professional Committees** ? Nominating Committee, Basic Science Division of the American Ceramic Society.

Surya Kalidindi: Key Reader? *Metallurgical Transactions A*, **Symposium Co-Organizer**? "Materials by Design", Plasticity '02; **Session Chair**? "Dislocations and Plasticity", Symposium W, Session W1, MRS Spring Meeting, 2002; **Reviewer**? National Science Foundation (panel review); *Metallurgical Transactions A, International Journal of Plasticity, Journal of the Mechanics and Physics of Solids*.

Richard Knight: Secretary/Treasurer ASM International® Thermal Spray Society [TSS] 10/01 to 9/02, Member TSS Board of Directors, Elected as TSS Vice-President Chair ASM TSS Training Committee (since 1997); **Technical Program Chair** ASM International®, Liberty Bell Chapter, "Sauveur Award Night" March 21st, 2002. **Member**- Programming Committee, 2002 International Thermal Spray Conference Essen, March 4-7, 2002. **Journal Reviewer**? *Plasma Chemistry and Plasma Processing* (Member of Editorial Board, *Journal of Thermal Spray Technology* (JTST) , *Materials Science and Engineering A*.; *Powder Metallurgy* . **Proposal Reviewer**? National Science Foundation [CTS] ; Drexel/MCPHU Synergy Grant proposals.

Frank Ko: National Academy of Sciences, Served on Board of Army Sciences and Technology. **Member of the Editorial Boards** for the *Journal of Composites Technology and Research (JCTR); Composites Manufacturing and Science (CMS); SAMPE Journal; Journal of Nonwovens Research;* **Reviewer** for *Textile Research Journal, JCTR, CMS.* **Proposal reviewer**? National Science Foundation, European Community Research, Hong Kong Industrial Department, Canadian National Research Council. Member? Army Research Office Assessment Team for Global Activities for Low Cost Composite Manufacturing

Alan Lawley: Member, National Academy of Engineering; Panel of Fellows, APMI International; Information Advisory Committee, APMI International; Technical Board, Metal Powder Industries Federation; Editorial Review Committee, P/M Science & Technology Briefs (Metal Powder Industries Federation); Council of Fellows, ASM International; Awards Committee—Liberty Bell Chapter, ASM International; Hoover Award Committee, AIME; Past President's Council, TMS. **Co-chair and Lecturer**? Advanced Powder Metallurgy Short Course, Metal Powder Industries Federation, Indianapolis, IN, September 2001. **Judge**? 2002 Powder Metallurgy Metallography Competition, PM^2TEC'2002, Orlando, FL, June 2002. **Chair**? Powder Metallurgy Technologist Certification Commission, APMI International; examination proctor. **Consulting**? Hoeganaes Corporation. **Director**? Met-Pro Corporation; Board of Directors, APMI International. **Editor**? *International Journal of Powder Metallurgy.* **Journal/Proposal Reviewer**? NSF, ONR, NIST/DOC, *Acta Met, Met. Trans., Mats. Sci and Eng.*, textbook manuscripts. **Member,** Technical Program Committee, PM^2TEC'2002 and 2003 (USA). Technical Program Committee? International Conference on Metal Powder Deposition for Rapid Manufacturing (MPIF). **Co-Chair**? International Conference on Process Modeling in Powder Metallurgy and Particulate Materials (MPIF). **International Advisory Committee**? International

Powder Metallurgy Conference, Gazi University, Turkey. **International Committee**? Third International Conference on Materials and Manufacturing Technologies, Technical, University of Cluj-Napoca, Romania.

Chris Li: Reviewed several papers for *Macromolecules* and *Polymer*.

Michele Marcolongo: **Reviewer**? NIH/NIAMS SBIR Study Section (2 sessions). **Reviewer**? NSF/Nanomaterials, NIRT Study Section. **Program Chair**? Society for Biomaterials Orthopaedics Special Interest Group (2001-2002). **Secretary/Treasurer**? Society for Biomaterials, Orthopaedics Special Interest Group (2002-2003). **Conference Organizer**? Society for Biomaterials Orthopaedic Special Interest Group Program Director *Organized proceedings review, approval, session organization, and moderator assignments for over 250 abstracts. IEEE Northeast Bioengineering Conference Biomaterials **Program Director** (organized Biomaterials session for conference). IEEE Northeast Bioengineering Conference Biomaterials **Workshop Coordinator** (organized Biomaterials workshop and led roundtable discussion).

Wei Shih: Journal Reviewer? Reviewed 4 papers for *J. Am. Ceram. Soc*., 1 paper for *Acta Materialia, 1* paper for *Ind, Eng. Chem. Res.*, 1 paper for *Phys. Lett*. **Proposal Reviewer**? National Science Foundation

T.S. Venkataraman: Textbook Reviewer? Halliday and Resnick; *Physics for Engineers and Scientists*, Serway; **Member?** Board of Directors: Delaware Valley Science Council , Chair of the audit Committee, member of the examinations and awards committees

Antonios Zavaliangos: **Editorial Board**—International Journal of Powder Metallurgy; **Co-Organizer**—Symposium W on Multiscale Modeling or MRS 2002, Spring Meeting. **Member**—Program Committee of 2002 Int. Conf. on Process Modeling in PM, Oct. 2001. **Proposal Reviewer**—Air Force Office of Sponsored Research (AFOSR), National Science Foundation (NSF/CMS) review panel (2), NSF/DMI review panel (1). **Journal Reviewer**—International Journal of Powder Metallurgy; Journal of Composites Technology and Research; Materials Science and Engineering. **Key Reader**—Metallurgical Transactions.

4.2 University/College Service Activities

Roger Doherty: Member—MEM/ COE Dept Head Search Committee; COE Assessment Committee; Lindback Selection Committee

Yury Gogotsi: COE Recruitment Committee; Faculty Senate, Drexel; Research Enterprise Building Committee, Drexel Study Abroad Advisory Committee, Drexel; Council on Research, Drexel and MCP Hahnemann Research Financial Reporting Committee, Drexel and MCP Hahnemann merger subcommittee

Michele Marcolongo: Member? College Undergraduate Curriculum, SWE Committee (TJU/Orthopaedics). Advisor to the Drexel University student chapter of the Society for Biomaterials.

T.S. Venkataraman: University Alcohol and other drug Task Force Committee; University TDEC Advisory Council; Drexel University Alliance for Minority Participation; TDEC Freshman Engineering Committee; Committee Member? Summer Immersion Program for Perspectives; TA Orientation and Excellence in Teaching Assistant Award Committee; College of Engineering Assessment Committee; College of Engineering Outreach Committee

Antonios Zavaliangos : Assistant Department Head, College Advisory Board T&P Committee**.**

4.3 Service Awards and Honors

Yury Gogotsi

- The Most Valuable Member of Materials Engineering Department Award, Drexel University, 2002.
- Certificate of Appreciation from the Governor of Illinois George H. Ryan and Illinois Math and Science Academy "For Commitment to Excellence in Student Research Through Mentoring Tomorrow's Scientists and Scholars," 2002.

Frank Ko

? National Research Council? appointed Standing Committee member

Alan Lawley

? Task Group on Research for the International Space Station, National Research Council/National Academy of Engineering
? NAE Liaison Member (Materials Division)? National Research Council.

Judy Trachtman

? Recipient of the Harold Myers Award for Outstanding Service to the University

APPENDIX I

College of Engineering
AY 2001-2002

Continuous Quality Improvement Report

Materials Engineering Department

September, 2002

Roger Doherty

Introduction

A general introduction to the Departmental Assessment of its courses was provided in the CQI report 1999/2000 and need not be repeated here. In the present document we summarize the student evaluations of all our courses including the Faculty response to the student performance in each class. We also report on the Coop Evaluation of the Materials Engineering students by their employers and the student evaluation of their Coop Experience (this was for the Co-op period Spring-Summer 2001, the last Co-op period that our students completed). The Spring-Summer 2002 report will not be available until early March 2003.

The main evaluation is for the Materials Engineering Courses taught by the Materials Engineering Faculty. This covers the Materials Undergraduate Courses and Graduate Courses taken by our undergraduates (either as technical electives or as graduate courses for the MS/BS students).

This year we graduated 14 BS students with an average GPA of 3.14, this is slightly higher than the GPA of 2.84 earned by the 15 BS students in 2000-2001.

As in the previous year, we were able to achieve very high response rates for the Web-based evaluations. In the Fall Quarter there was a 70% response; this fell slightly to 67% and 64% in the Winter and Spring quarters, respectively. These compare to overall response rates of 50%, 40% and 35% for the College of Engineering in the first three quarters of the year. In each quarter we had, by a significant margin the highest response rates for any of the departments in the College. The high response rates are due, in part, to our efforts to encourage students to complete the survey. With our small numbers it is essential to get a high response rate for the results to be meaningful. However it is also reasonable to assume that the student response to our request is an indication of student morale, interest, and their willingness to help the department.

Description and Analysis of Student Course Surveys and Faculty Responses

Undergraduate Courses:

MATE 100* Introductory Freshman Course Taught by the Entire Faculty.
Assessed by class reports. Well-received with most students rating it a worthwhile activity. Of the 150 students who attended, 97 completed the reporting requirements (a written paper or a hands-on design activity). After the course, the number of Materials Engineering Students in the freshman year increased from 3 to 8. The student response, both on paper immediately after the class, and from the Web based survey, indicated general satisfaction with the course. As in previous years there was a marked preference for the laboratory demonstrations rather than the supporting lectures. In so far as is possible in

a two-day course with 150 students we should continue to try to increase the hands-on elements of this program.

TDEC 211 Materials I Sophomore Fall Term

Group A: 36 responses out of 119.
Satisfactory increases in the students' self assessment of the required skills
Before (1.8-2.5)/5; after (3.5-3.9)/5.
Student ratings: Course 3.5/5; Instructor 4.1/5.

Student ratings of the Recitation Instructors 3.3-4.4 Average 3.85

Group B 38 responses out of 129.
Satisfactory increases in the students' self assessment of the required skills
Before (2.0-2.3)/5; after (3.6-4.0)/5.
Student ratings: Course 3.6/5; Instructor 4.1/5.

Individual student comments not available.

Faculty Response: The instructor was happy with the student response – at least from those who attended class regularly, but he was very unhappy with a large minority of the students who seemed highly unmotivated. He was very unhappy about their level of mathematical skills, which he described as "abysmal to non-existent." He also commented on the bimodal distribution of student motivation and ability.

TDEC 211 Materials 1 Sophomore Spring Term

Group A 18 responses out of 99.
Increases in the students' self assessment of the required skills are not considered satisfactory.
Before (1.9-2.4)/5; after (2.9-3.3)/5.
Student ratings: Course 3.0/5; Instructor 2.6/5.

Student ratings of the Recitation Instructors 1.6 -3.3 Average 2.45

Group B 42 responses out of 169.
Increases in the students' self-assessment of the required skills are not considered satisfactory.
Before (1.7-2.2)/5; after (3.0-3.2)/5.
Student ratings: Course 2.5/5; Instructor 3.0/5.

Apart from a few students who got involved, came to class and asked questions at the end of class, the majority were unmotivated and many missed class. Two of the comments were "many of the students in my group did no homework problems" and (the course)

"should be made so easy that we do not need to work at it". The students did not like the lecturing style. The material was described as boring and, with some exceptions, students did not feel that the material was relevant to engineering. The material covered electrical properties of semiconductors, magnetic properties as applied to electrical motors and generators, data storage, and optical properties related to laser transmission of data down optical fibers!!

Faculty Response:

Lecture attendance (taken by student sign in) was poor. Only about 60% of the class attended > 85% of the lectures. The examination grade correlated well with lecture attendance; those attending > 85% of the lectures scored an average of 75%, while of those attending only 50% of the lectures their average grade was 55%. Given the different response of the students to the two different instructors, a clear message is given about who should and who should not be an instructor in this course! The one aspect of the students assessment with which the instructor agreed was that their achievement of the skills level in the six course objectives was only 3/5 - that is only FAIR.

Having to teach an engineering course in Stein Auditorium with totally unusable chalkboards was unacceptable. Even the overhead projection facilities were poor, and there was no desk in which samples and demonstrations could be shown. Drexel students deserve classrooms better-suited to their education.

Student Assessment of the Recitation Instructors:

An interesting result was the markedly lower student assessment of their recitation instructors in TDEC 211 (Spring) rather than their assessment of their instructors in TDEC 211 (Fall) and TDEC 212 (Winter and Summer). While this may be merely a reflection of the lower success of the lecture course, it may also reflect something of this particular group of students (almost none of whom are Materials majors). In the equivalent term last year (00-01) where the course and the course lecturer were equally poorly rated, the recitation instructors had a much higher rating (2.8-4.4, Average 3.81)

TDEC 212 Materials II Sophomore Winter Term.

Group A 36 responses out of 119.
Satisfactory increases in the students' self assessment of the required skills
Before (2.0-2.4)/5; after (3.5-4.0)/5.
Student ratings: Course 3.5/5; Instructor 4.1/5.

Group B 38 responses out of 129.
Satisfactory increases in the students' self assessment of the required skills
Before (2.0-2.3)/5; after (3.6-4.0)/5.
Student ratings: Course 3.8/5; Instructor 4.2/5.

Student ratings of Recitation Instructors 2.8 –4.1 Average 3.57.

Faculty Response: As in TDEC 211, the lack of motivation among many of the students was felt to be a reason why this course is becoming "less and less satisfactory to teach". He also comments on the bimodal distribution of student skills particularly in the areas of mathematics and physics.

TDEC 212 Materials II. Sophomore Term 4

Group A 30 responses out of 141
Satisfactory increases in the students' self assessment of the required skills
Before (1.9-2.1)/5; after (3.3-3.6)/5.
Student ratings: Course 3.0/5; Instructor 3.5/5.

Group B 26 responses out of 125.
Satisfactory increases in the students' self assessment of the required skills
Before (1.6-2)/5; after (3.2-3.8)/5.
Student ratings: Course 3.4/5; Instructor 3.7/5.

Student ratings of Recitation Instructors 1.0 – 4.5. Average 2.8.

Faculty Response: Student comments 'mirror' those from TDEC 212 taught in the second term – lack of motivation, absence of a work ethic and a bimodal distribution of student skills in mathematics and physics.

MATE 130 Materials Laboratory I Sophomore Term 2

6 responses out of 7.
Satisfactory increases in the students' self assessment of the required skills
Before (1.4-2.7)/5; after (3.7-4.7)/5.
The students expressed general satisfaction with the class and the instructor. Some criticism of the equipment was made.
Student ratings: Course 3.7/5; Instructor 3.5/5.

Faculty Response: As in the previous year, the instructor felt that the students needed more teaching in the area of phase diagrams, which was not covered in TDEC 211 in the fall term. There was agreement with the student criticism that some of the equipment needs to be replaced. The lack of an adjacent classroom for class instruction was noted. The previous year's suggestion that fewer samples be examined was successfully implemented.

MATE 216 Polymers I Pre Junior Term 1

12 responses out of 13.
Course taught this year as MATE 495 Special Topics. The laboratory component was moved. No Course Objectives available for student assessment.
Student ratings: Course 2.7 /5; Instructor 3.2 /5.
Major problems seen by many (but not all) students with regard to the presentation of the course, the textbook (rated 1.6/5), and the lack of the laboratory previously associated with the course.

The instructor teaching the course has now left the university and a new faculty member will teach the course. It will be important for him to decide if the previous decision to move the laboratory component out of this course was a mistake.

MATE 240 Thermodynamics and Kinetics I Pre Junior Term 1

12 responses out of 13.
Satisfactory increases in the students self assessment of the required skills
Before (1.7-2.6)/5; after (3.5-4.0)/5.
Very positive response to the material covered and the instructor
Student ratings: Course 4.6/5; Instructor 4.9/5.
The students were enthusiastic about Professor Shih and his teaching of the subject. The only criticism was of the textbook. The changes made by the instructor based on previous comments were clearly very successful.

Faculty Response: The course was clearly successful. There was again the worry (that is increasingly being expressed by other COE Faculty) that some students have a weakness in basic mathematics. Some students had difficulty with simple nonlinear equations. There were again problems with the classroom. This time the problem was poor blackboard lighting in the classroom in the library. Last year, the problem (noise from an adjacent room) was in the room situated on the third floor of Randell Hall.

MATE 245 Thermodynamics and Kinetics II Pre Junior Term 2

9 responses out of 9. Why the fall off in the number of students? There were 13 in the class in the previous term.
For some reason the part of the student evaluation based on the achievement of course objectives was missing. The list of objectives had been the same as in the previous year so there is no obvious reason for this omission.

Outstanding response to the material and the instructor.
Student ratings: Course 4.9/5; Instructor 5.0/5
Continued dissatisfaction with the textbook (as in the previous year).

Faculty response: Again concern expressed about mathematical abilities of the students, especially with regard to differential equations. There was a strong desire to increase the use of numerical/software tools for solving problems in thermodynamics. Yet again, there were classroom problems – now the state of the blackboard!

MATE 270 Advanced Materials Lab I Pre Junior Term 2

11 responses out of 13.
This year the course was regarded by the students as unsuccessful – mainly problems of co-ordination between the various teachers and the TA for the laboratories. It compared unfavorable to the MATE 130 laboratory course.
Before (3.0-3.46)/ 5; After (3.6-4.0)/5.
Last year the student ratings were: Course 3.8/5; Instructor 4.3/5.
This Year Student Ratings: Course 2.7/5; Instructor 3.5/5.

Faculty response**:** The instructor felt that the students were weak and that they took the course in its present format too early in their academic career. The performance of the TAs was regarded as much better by the instructor than by the students – again indicating some significant mismatch in perceptions of what the course required.

This course varies year by year in student response – clearly this depends on the level of coordination between the several instructors. It would seem preferable to have a single instructor not a course coordinator

MATE 360 Metals I Pre Junior Term 1

14 responses out of 16.
Solid increases in students' self assessment of the required skills
Before (2.4-3.4/5); After (3.8-4.0)/5.
Student ratings: Course 4.2/5; Instructor 4.9 /5.

This year the course was taught for the second time by Dr Lawley and was regarded by the students as much more successful than in the previous year. By going more slowly, some of the difficulties noted previously were overcome but at the cost of covering less material. Point defects and annealing of deformed metals were not taught due to lack of time. These topics will need to be covered in the second 'metals' course.

Faculty response: The class tutorials in crystallography proposed in light of the previous years' problems were found to be successful. Some changes will be made next year on the homework problem sets.

MATE 340 Ceramics I Pre Junior Term 2

10 responses out of 12.
Very solid increases in student self assessment of their performance in the course objectives
Before (2.0-2.8)/5; after (3.8-4.2)/5.

However, the student ratings (Course 2.9/5; Instructor 3.5/5) were critical, especially of the attitude of the professor and the demands he was making. The course was taught by Michel Barsoum, the usual instructor after a years absence on sabbatical. Given the increase in student self assessment of their knowledge of the course objectives it might appear that a challenging course was much needed by this group of students.

Faculty response. The instructor was very unhappy with the attitude of the students who he felt were not making any serious effort – only one student made regular visits to see him in his office to discuss problems. The students were also weak with respect to mathematical ability. However, the students appeared to be improving in their understanding of the course objectives.

MATE 345 Ceramics II Junior Term 1

12 responses out of 16.
This course is largely unchanged from prior years. Previously this was a well-received course. It is to be noted that this is a different cohort of students from those taking 270, 340 and 360 who were Pre-juniors. This group returned from their second Co-op experience.

Very satisfactory increases in the students self assessment of the required skills
Before (1.7-2.0)/5; after (3.7-4.0)/5.
The improvements in the student response to this course noted in the previous report (CQI 2000-2001) were maintained.
.
Student ratings this year: Course 4.0/5; Instructor 4.0/5.
Faculty response: The instructor was much happier this year about the TA's performance. There is a lack of a good relevant textbook so the instructor is making available extended copies of notes and would like to convert these into a textbook.

MATE 370 Mechanical Properties I Junior Term 1

8 responses out of 13.
Disappointingly small increase in students self evaluation
Before (1.5-2.7)/5 After (2.9-3.8)/5.

Also a marked change in the students' evaluation from previous years:
Student ratings two years ago: Course 4.0/5 Instructor 4.0/5.
Student ratings last year: Course 2.9/5 Instructor 3.2/5.
Student ratings this year: Course 2.7/5 Instructor 3.6/5.

Last year, there was a new instructor; this year it reverted to the previous instructor but there were problems again. The students were very critical of the textbook and were unhappy with some of the classroom experience (use of slides was not well received) though the out of classroom help provided by the instructor was much appreciated.

Faculty Response: The instructor was somewhat taken aback by the attitude of the students in this class. They are expecting to be spoon-fed the material. They are reluctant to spend the necessary time to study the material on their own. This may be due to the fact that they lacked the needed linear algebra background and perhaps this made it difficult for them to try and explore the subject matter on their own.

MATE 315 Polymers II Junior Term 2

7 responses out of 12. Satisfactory increases in the self-assessment of the required skills: Before (1.5- 2.4)/5; after (3.9-4.7)/5.
Student ratings: Course 4.4/5; Instructor 4.8/5.
As in previous years, the students' ratings of the course and of the course instructor were outstanding.

Faculty response: The students were better-prepared than in the past with respect to polymer structure and properties, though again their mathematical weaknesses were noted. In response to earlier comments some changes in the projects and in the software used were made. The instructor was pleased with the current course, even though continued improvements in the projects and the notes are to be made

MATE 366 Metals II Junior Term 2

9 responses out of 14
Satisfactory increases in the students' self assessment of the required skills.
Before (1.6-2.4)/5; after (3.8-4.2)/5
Student ratings (For 99-00): Course 3.2/5; Instructor 3.2/5.
Student ratings (For 00-01): Course 4.3/5; Instructor 4.6/5.
Student ratings (For 01-02): Course 3.7/5; Instructor 4.3/5.
The improvements last year from the previous year when the laboratory instructor and the class instructor were different were maintained, if not quite to the same level. The chemistry between the faculty and the class of 00-01 had been exceptionally good. As before, there were complaints from some of the students about the laboratories

Faculty Response: Again a good class who responded well to the challenges of the course. In response to previous comments on blackboard use, this year overhead slides were successful though there were some comments about them being shown too rapidly. It is clear that the laboratory will need to be improved – this will be necessary anyway in light of planned curriculum reform. The experiment on hardening of steel will need to be included to make up for its removal from MATE 130. When the course is next taught (2003-4) the laboratory component will need complete revision. The course still remains very satisfactory to teach (as for MATE 315). Despite concerns about the motivation of our incoming students (see comments on some of the Pre-junior classes) by the junior year, our students are maturing well.

MATE 400 Materials Engineering Design I Senior Term 1

23 responses out of 27
Moderate increases in the students' self assessment of the required skills
Before (1.9-2.7)/5; After (3.1-3.9) /5.
Student ratings:
Last year (00-01) Course 3.0/5 Instructor 3.5/5.
This year (01-02) Course 4/5 Instructor 4.7/5.
A successful course with a high regard for the instructor and his approach. The change from the previous year may reflect the change of instructor. As previously, several students wished that this statistics-based course had occurred earlier in their career at Drexel. One significant critical comment was the difficulty of a two-hour class without a break in the middle.

Faculty Response: The students while well motivated, especially from their Co-op experiences, were again weak in the mathematics needed for statistics and mechanics. The provision of revised notes delivered via Power Point seemed (with a few exceptions – the student comment about "hating ppt") to meet the needs of the students. It is still hoped to have a college wide statistics course with the "materials" part moving into Design II (MATE 410)

MATE 460 Engineering Computational Laboratory. Senior Term 1 this year taught in term 3 in parallel with the Graduate Numerical Course.

15 responses out of 16.
Moderate increases in the students' self assessment of the required skills
Before 1.3-2.8/5; after 2.5-3.9/5
Student Ratings: Course 3.5/5; Instructor 4.0/5.
Student comments match the faculty perception that it would be much better to have the course earlier than the spring term of the senior year and that they should have had some earlier introduction to programming. The students also felt that the TA was not as much help as they would have liked.

Faculty Response: Again the usual comment of some students' weakness in mathematics and in particular an almost total lack of programming skills. The new timing of the course, moved to the spring term, was felt to be unfortunate, especially as the students were so focused on senior design. The joint teaching with graduate students appears not to have been a problem. The use of the MEM computer room for teaching was felt to be a success.

MATE 410 Materials Engineering Design II Senior Term 2

11 responses out of 14.
Limited increase in students' self assessment of the required skills
Before (2.7-3.0)/5; After (3.4-4.0)/5.
Student ratings; Course 4.2/5; Instructor 4.4/5.

This class which in the past was very highly regarded, was perhaps a little less so this time. Nevertheless the response was still very positive. The students were a little unhappy with two 90-minute lectures. Maybe a 2-hour lecture (with a break) plus a one-hour lecture is preferred. The students enjoyed the "case study" approach used.

Faculty Response: The instructor was pleased with the student response and continued to believe that the case study approach was successful. There was concern about student weakness in mechanics - made worse perhaps by having this course taken at the same time as the second Mechanical Properties course; MATE 472. The new case study on a composite beam was well received, as was the use of the Cambridge University "Materials Selector" CD. A new ceramics-based case study will be used next year – in response to student suggestions.

MATE 472 Mechanical Properties II Senior Term 2

19 responses out of 27. (From undergraduates)
For some reason the evaluations did not report the students full assessment of their skill level in meeting the course objectives.

Data from 00-01 (Before (1.4-2.0)/5; after (3.6-4.0)/5).
Satisfactory increase in the student ratings from 99-00 to 01-02 was maintained this year:

This Year: Course 3.8/5; Instructor 3.9/5.
The changes introduced last year by the instructor - "more case studies and use of new software" continue to be successful. There were some minor criticisms of teaching style and timing in grading but these are to be expected for a young faculty member, especially when teaching (this year) a course with juniors, seniors and graduate students. In the future with just juniors and graduate students, this will be easier to handle.

Faculty Response. Despite the large and non-homogeneous class the performance was satisfactory, though as always the students' mathematical weaknesses, especially in linear

algebra, were a problem. The project format also seemed successful and with fewer numbers in the future, this should be even better

MATE 493 Senior Design Senior Terms 1,2, and 3.

(14 out of 15 Student evaluations)
Solid increase in student self evaluations, reaching a satisfactorily high level. After 3 Co-op experiences and two terms of senior design, students are well experienced in this key activity. (From 3.2-3.8/5 to 4.2-4.3/5)
Student ratings: Course 4/5; Instructor 3.5/5.

The instructor rating is a little difficult to interpret - one faculty member is responsible for the organization of the course, initial lectures, arrangement of the term-by-term presentations, the main activity is by the individual faculty advisor.

The students felt that the organizational requirements for the course were somewhat poor, though they scored 4/5 for the course objectives and the requirements were clearly communicated.

Faculty Response. After the student presentations and general faculty grading of the written reports, (each report is graded by two faculty) it was generally agreed by the faculty that this had been a good set of design / research activities.

Personal comment from the CQI author (RDD) - as in the past I regret that faculty did not regard it as a top priority to attend all the student presentations. In our ABET self study we claimed that a major way that we could get our students to meet the departmental objectives was through our observation of their Senior Design performance. This should mean not only the students we advise individually, but all the students through their three Senior Design oral presentations.

Graduate Courses:

MATE 500 Structure and Properties of Metals Term 1

5 responses out of 7.
Reasonable increases in the students' self assessment of the required skills
Before (2.0-3.0)/5; After (3.8-4.0)/5.
Student ratings: Course 4.0/5; Instructor 4.2/5.
Again a criticism is that the textbook is not well-liked. Unfortunately there does not seem to be a good alternative at the correct level. Students also felt that there was a lot of material covered.

Faculty Response: The difficulty with the textbook is partially solved by a provision of detailed class notes plus reference to a range of somewhat more elementary texts. However if this course is to continue, a textbook will need to be written. The class responded well

and gained reasonable grades, including good term papers. (2 A grades, 4 B grades and one C)

MATE 501 Structure and Properties of Polymers Term 3

10 responses out of 13.
Very satisfactory increases in the students self assessment of the required skills
Before (2.1-2.5)/5; after (4.1-4.3)/5).
Student ratings: Course 4.4/5; Instructor 4.7 /5.
A very successful course; the students were very positive about the material, the presentation and the instructor.
Faculty Response**:** The instructor will keep the same textbook, which is suitable for this course. Classnotes will be revised in order to bring up-dated information.

MATE 502 Structure and Properties of Ceramics and Electronic Materials Term 3

Not taught this year.

MATE 510 Thermodynamics of Solids Term 2

9 responses out of 16.
Moderate increases in the students' self assessment of the required skills
Before (2.6-3.0)/5; After (3.5-4.0)/5.
Student ratings: Course 3.4/5; Instructor 3.9/5.

Good student response though the material is, for some, still a little abstract. Request for more applications, or perhaps for explanation of the importance of the applications given.

Faculty Response. The student performance was felt to be satisfactory. The solid performance in the homework problems did not extend to the examination performance (only 2 A grades and 14 B grades). To improve clarity of presentation, a full set of notes was transferred to overhead slides and made available (after the class) to the students. There is now a request for typed solutions to the homework problems.

MATE 515 Experimental Techniques in Materials Term 1

10 responses out of 13. 6 Undergraduates were taking the course as a technical elective.
Students self assessment of the required skills were not recorded (they were provided by the instructor and are listed below for future use.

1. To understand the physical basis of X-ray production, measurement and diffraction and its application to microstructural characterization.

2. To understand the physical basis of optical microscopy and its applications to microstructural characterization.
3. To understand the physical basis of scanning and transmission electron microscopy and diffraction and their applications to microstructural characterization.
4. To understand the physical basis of local (micro scale) chemical analysis by x-ray analysis, Auger analysis, and electron energy loss spectroscopy and their application to microstructural characterization.
5. To be able to determine which of the techniques is best suited for a particular problem in materials characterization.
6. To recognize that there are many new analytical techniques available and to have the confidence to determine how they work and how they can be used for a particular problem.

Student ratings: Course 3.7/5; Instructor 4.4 /5.

Good student response to the course – though the amount of material and the lack of time for demonstrations was a point of criticism. The provision of detailed copies of the overhead slides was appreciated.

Faculty Response. The major failure was coordination with the intended equipment demonstrations – leaving it to the students to schedule these themselves was a mistake. The "worked example" classes were, as in the past, successful. Several of the undergraduates failed to submit term papers, which pulled down their grades.

MATE 580 (i) Fall Mechanical Properties I Term 1

8 responses out of 10**.**
Course Objectives Missing. (For graduate course)
Student ratings: Course 3.8/5; Instructor 4.5 /5.

As for the undergraduates, the textbook was not liked. However, the graduate students appeared to find the course reasonably successful.

MATE 580 (ii) Fall Mechanical Properties II Term 2

6 responses out of 11**.**
Course Objectives Missing. (For graduate course)
Student ratings: Course 4.0/5; Instructor 4.4 /5.

Note that the graduate student response to this course was more positive than the undergraduate Response (MATE 472.) The pace of the presentation was, (as is often the case) a minor problem. However it was good to see one of the students describing this as “one of the best

courses I have ever taken" Given the mixed nature of the class, (see MATE 472) this is a strong compliment on teaching technique.

MATE 580 Ceramic Processing Term 3.

8 responses out of 10.

Satisfactory increases in the students' self-assessment of the required skills
Before (2.3-2.9)/5; After (3.9-4.2)/5.
Student ratings: Course 4.7/5; Instructor 4.8 /5.

Very good student response. One obvious student suggestion was to make "Structure and Properties of Ceramics" a prerequisite for this course.

Other Evaluations:

Survey of Drexel Alumni and Alumnae who graduated in 1997

Four students out of 18 responded to the survey (22%) compared to 19% for the COE in general. The responses from this small sample were highly satisfactory. 4/4 said if they had to do it over again they would attend Drexel University and take the major again. In the COE, in general the response was 91% and 87% respectively. All the students are currently employed in positions in which their Drexel experience prepared them well for their current career, and in which the education in the major is highly or moderately related to their current job. 3/4 are earning between $50 to $65k a year and 1/4 are earning between $65 to $80k a year. On the ABET a-k criteria 3/4 to 4/4 said they felt they had a high or moderately level of development. Topics in which 4/4 said they had a high level of development were:
Ability to apply mathematics, science, and engineering
Analyze and interpret data
Identify and formulate problems
Develop viable solutions to problems
Use techniques, skills, and modern tools necessary for practice

1/4 said they were either enrolled in, or planning to undertake, Master's level study and all felt that their Drexel education had prepared then well for further education.

In all these areas the response of the materials students matched (and usually exceeded) those of the COE in general.

Employers' Surveys Co-operative Competence of Materials Engineering Students: Spring, Summer 2000-01.

On a scale of 1 Unacceptable, 2 Marginal, 3 Acceptable 4 Good and 5 Outstanding, Materials Engineering students scored in the range of 4.2 to 4.6 for the Job Performance Ratings, with an overall rating of 4.42 compared to a COE average score of 4.25.

On the same scale, for their technical abilities, Materials Engineering students scored the following compared to the COE average:

	MATE	COE
Function on multi-disciplinary teams	4.23	4.17
Understand professional /ethical responsibility	4.37	4.08
Effective oral communication	4.22	3.85
Effective written communication	4.06	3.78
Life long learning	4.44	4.16
Knowledge of contemporary issues	4.13	3.99
Apply mathematics, science, and engineering	4.21	4.15
Design/conduct experiments	4.08	4.07
Analyze and interpret data	4.22	4.09
Design system component process to meet needs	4.15	4.08
Identify /formulate problems	3.93	3.98
Develop viable solutions to problems	4.07	4.03
Use techniques, skills, tools for practice	4.17	4.23
Understand how solution impacts society	3.82	3.91

These evaluations of our students, of course, are clearly rather satisfactory.

CQI 00/01: Proposed Changes To the Curriculum:

(1) Summary of changes decided upon for the lab content of the curriculum.

MATE 200 (the new materials characterization lab) will be taught by one faculty member and the experiments will include Raman spectroscopy, electron microscopy, indentation and thermal analysis. This will replace the former Advanced Materials Laboratory (MATE 270) and portions of the sophomore level first Materials Lab course (MATE 130). Another sophomore level, lecture course will be developed as well.

(2) The incorporation of the Polymers I, Mechanical Properties I, Biomaterials I and II, and the new Advanced Materials Laboratory as core courses in the tissue engineering track of the biomedical engineering major. As a consequence, there should be an effort on the part of the faculty teaching these courses to try and impart a "bio" flavor to their courses, in an effort to clarify the courses' relevence to biomaterials. A syllabus for the Biomaterials I course is attached. The new Biomaterials II course will be offered Winter Term (2002-03) so a syllabus is not yet available.

(3) Elimination of Mechanical Properties II as a consequence of the introduction of the two biomaterials courses and a change in the focus of our curriculum towards biomaterials and to some extent towards nanotechnology.

(4) After trying several different models (e.g. co-teaching undergraduate core and graduate core courses in mechanical properties), the faculty has finally decided on a new model for undergraduate and graduate courses. Going forward, we will enforce a clear difference in the coverage of the undergraduate and graduate courses. This means that we will not be repeating in the graduate metals course, significant portions of what we taught in the undergraduate Metals I and Metals II classes (here metals is used simply as an example - the same applies to polymers, ceramics, mechanical behavior, and thermodynamics). Instead, we will screen all incoming graduate students and where we find that a student does not have an adequate background, we will ask him/her to take the undergraduate class first and then register for the graduate class, i.e. all graduate courses will have "permission of the department" listed as a prerequisite and the student will have to discuss his/her background with the instructor before registering for the course. This, we believe, will lead to a better educational experience for our graduate students and the BS/MS students in particular!

Conclusions and Recommendations:

There appear to be no major problems with the curriculum as a whole and its output. Two clear recommendations emerge:

(i) The Course instructor for the Spring Term TDEC 211 (the author of this report) should not continue as the course lecturer – his style of teaching does not work with large classes of sophomores. Other lecturers (MM, MB, AL) are clearly more able to communicate successfully with this group of students. RDD would be much happier as a recitation instructor for the class than the lecturer.

(ii) The senior exit interviews carried out (a) with students collectively over lunch with several faculty and (b) individually with the department head or a single faculty member (as was carried out in previous years, but was omitted this year) should be continued. It provided well focused thoughts on our strengths and weaknesses, as seen by our graduating students.

APPENDIX II: COMMITTEE REPORTS FOR AY 2001-2002

Facilities Committee 2001-2002 Summary

1. Committee:

- Richard Knight [Chair], David Von Rohr, Tim Kelly, Surya Kalidindi.
- Supported by Judy Trachtman, MAGNET & MESPO.

2. Mission/Responsibility:

- Appearance, quality and maintenance of the Office, Laboratory and Equipment facilities in the Department of Materials Engineering.

3. Mission/Goals:

- To maintain and improve the quality of Departmental facilities.
- To develop strategies and plans to improve Departmental facilities:
  - *Assessment of existing facilities.*
  - *Prioritizing of needs.*
  - *Formulation and coordination of proposals for new equipment [eg. NSF Equipment Grants, State $ matching opportunities, Alumni donations, gifts etc.].*
  - *Monitoring maintenance, safety and housekeeping.*

Committee has been active in the areas of Renovations; Space Allocation; Equipment Acquisition and Disposal; Safety & Health; and Financial/Administrative.

4. Facilities Renovations:

Note: Some items were cost-shared between the Dept. and Dean's Office.

• **Graduate Student Offices [27-340/338/438]:** [$25,859.16] - Recarpeted & Repainted [$8,800] - New furniture…20 desks & hutches, 24 chairs. [$17,059.16].	• **New Lab Space [4-276A-C]:**[$24,075] - 4-276A --> Nanoindenter. - 4-276B --> UV Raman. - Painted [$2,650] & Refloored [$1,825] - Re-keyed [$700] - HVAC [$18,900]
• **Departmental Offices [27-344]:**[$15,344.56] - New furniture…desks + hutches, lateral files, chairs, guest chairs, mail sorter.	• **Microscopy Lab. [3-258/259]:** [$1,653] - New computer desks [3], bookcases [2], chairs [11].
• **Security System:** [$9,104.37] - Cameras installed in 4-276A, F; 27-339/340/ 341; 27-344.	• **Labs in General:** - Discussed under *Safety & Health*

TOTAL SPENDING:~$76,036.09

5. Equipment/Facilities Disposal, Purchase & Acquisition

Some of the older, and unused, pieces of equipment in the Department were disposed of. Several new equipment items have been purchased, some donations received and installed:

- Osprey system power supply was donated to Crucible Compaction Metals, Pittsburgh.
- TSDC etc. was transferred to Philadelphia University [$22k].
- Miscellaneous junk equipment was removed [~$4,800].
- Three creep-test stands were donated by Southco [MB] [Value ~$14k].
- Hot tensile test stage purchased for the SEM/OIM [MB/Dept.] [~$25k].
- New autoclave system purchased[YG] [$17,400].
- New Perkin-Elmer DSC obtained [CL] [$50-60k].
- New general-purpose digital camera purchased [$500].
- Instron upgraded to state of the art [$35k]*.
- New "Jade" XRD software & database purchased [DVR/WS] [$12k]*
- Optical microscope + hot stage purchased [CL] [~$77k]*
- Molecular dynamics simulation software purchased [CL] [~$16k]*
- Pin-on-Disc tribometer upgraded to LabVIEW® control [YG] [~$10k] [Biomed $10k]

** Industry/State/CoE $ match cost-sharing.*

• ***TOTAL VALUE:*** **~$716,900**

Plans for the Upcoming Year

Plans for the upcoming year can be summarized in general as "more of the same"…continued lab. renovations, old/unused equipment disposal, equipment acquisition. Specific committee tasks include the following:

- Installation of HVAC in 4-276A, B & C. [authorized 4/15/02…completed] [$18,500]
- Installation of new ESEM…purchased through an NSF Equipment Grant awarded to T. Lowman [ChemE], M. Marcolongo, Y. Gogotsi et al. [$484,570].
- Acquisition of at least one more Satec type, table-top, mechanical tester + associated data acquisition computer through t-DEC [~$30k].
- Prioritization and renovation of remaining lab. areas in Bldg. 4… Metallography, Heat-Treating, Mechanical Testing, Foundry, PM/Hot Press:
  - Painting walls, ceilings, general clean-up, floors, lighting.
  - New cabinets, benches etc.
  - Plan to leverage $ against value of two [2] vacuum furnaces being mfd. and donated by Solar Atmospheres, & equipment donations being neg. with Leco, Buehler and/or Struers to renovate the metallography, heat-treating and mechanical testing labs.
  - Assistance and guidance was also sought from the VAC

Fund Raising Committee 2001-2002 Summary

As one of its initiatives, the committee is ready to begin 'courting' industrial colleagues/associates whose companies are likely to consider giving a major gift. In this context, the committee defines "major" as above $50,000.00. One of these individuals has been contacted to consider endowing a chair by their employer.

The committee has identified twelve key alumni/alumnae whose degrees (BS, MS, PhD) were in Metallurgical or Materials Engineering. The committee chair will contact these individuals by telephone to solicit a major gift for the department.

The committee prepared brief profiles on two members of the Visiting Advisory Board for the Fall 2002 departmental newsletter. In addition, a section on "Alumni News" was prepared for the newsletter.

The committee will begin to coordinate its fundraising activities with the network of Alumni Ambassadors who graduated from the department.

Frank Ko
Alan Lawley (Chair)
Michele Marcolongo
Judy Trachtman

Graduate Affairs Committee of Materials Engineering (2001-2002)

Members: Amotz Geshury (till 10/02), Chris Li, and Jennifer Wright (till 10/02)
Chair: Wei-Heng Shih

1. **Goal**
   Improve national ranking
   Increase number of students, especially PhD:
   Domestic students → Fellowships
   PhD/Fac: 4
   Increase retention rate
   Improve quality of students: GRE: Quantitative 750, Analytic 675

2. **Status**
   Full time students (Fall/02): 49
   Part time students (Fall/02): 12
   PhD: 35, 14 passed candidacy, 6 in the process this term
   MS: 26
   Composition: Asian 28, US 28, EU 5.

   Student application: 114 applicants
   17 offered financial aid, 7 came, 1 could not come due to visa
   70 admissions without aid, 6 came
   27 deny

3. **Accomplishments in 2001-2002**
   Revised the graduate program: Research oriented
   Proactive in advising graduate students-number of students leaving reduced
   Number of domestic students increased: 7 out of 13 incoming students
   Number of PhD students increased: from 26 to 35.
   Graduate awards: 20
   Graduate fellowships: 8

4. **Graduate course**
   To reduce the teaching load of faculty we combined some graduate/undergraduate core courses

5. **Implementation of candidacy exam**
   Special topic: two examiners
   Oral exam: research proposal within 6 months after the written exam
   Schedule is posted on web

6. **Recruitment**
   Improve financial aid package-one year offer instead of 9-month offer
   Encouraged our own undergraduates to stay and continue for graduate school
   Sent graduate open-house invitation to nearby universities

Publicity Committee 2001-2002 Summary

1. Printed and distributed the 3rd issue of the Newsletter.

2. Started work on the departmental brochure (Jennifer Wright). The brochure must be finished and used for distribution to new undergraduate students to help the department in recruitment of freshman students to MatE.

3. Updated the website.
Regular news posting
Faculty, technician, and Research Coordinator job postings
Departmental Calendar of Events posted
Message from the Department Head Posted
Funding Opportunities/deadlines for faculty & students
Brief faculty bios added to faculty web-pages

4. Nominated Prof. Lawley for a Senior Teaching Award from Drexel University.
Nominated Prof. Barsoum for the Fellow of the American Ceramic Society.
Successfully nominated students for various competitive awards and scholarships. All scholarships/awards have been approved with 100% success rate.

Undergraduate Committee 2001-2002 Summary

1. Faculty requested to each prepare a general presentation on Materials so any one could do a recruiting presentation on short notice.

2. Faculty Advising
   - JT assigned undergraduates to faculty advisors on random basis.
   - JT revised "Clearing" sheets for advisors to accommodate advisor's signature at specified intervals

3. Alumni Ambassadors
   - Nowicke to write up experience as an Alumni Ambassador for next newsletter.

4. TDEC 212 on the chopping block

5. Advanced Materials Lab
   - MATE 130 and MATE 270 were removed from the curriculum.
   - A new "Advanced Materials Lab." will be taught in PreJr year by Gogotsi
   - Still to be determined is what we recommend our students to take in Soph. year (instead of MATE 130).

6. Two-Day Course
   - Recommended revision of 2-day course to require project + paper completed
   - Require students to meet with advisor atleast 3 times to agree on project, give outline of how to proceed, and give a progress report

7. Community Colleges
   - JT will contact Kathleen Kennedy about type of program to attract community college students in a program allowing them to complete first two years of Drexel's program

8. Policy Statement
   - BS/MS students in Materials Engineering
   - If they have a GPA greater than 3.5 entering, they will be eligible for $12,000.00
   - It was suggested that we contact students with highest grades in TDEC (Fall & Winter) to try to recruit (see above)