

# JOSEPH L. CECCHI

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Dean, School of Engineering  
Professor of Chemical and Biological Engineering  
University of New Mexico  
Albuquerque, NM  
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1-505- 239-0176

## EDUCATION

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PhD	1972	Harvard University, Cambridge, MA Field: Physics
MBA	2011	University of New Mexico, Albuquerque, NM Field: Business
MA	1969	Harvard University, Cambridge, MA Field: Physics
BA	1968 <i>Magna cum Laude</i>	Knox College, Galesburg, IL Field: Physics

## ACADEMIC APPOINTMENTS

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### ADMINISTRATIVE

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2014-present	Dean, School of Engineering University of New Mexico
2011-present	Senior Advisor to the Provost for National Laboratory Relations University of New Mexico
2011-2012	Provost Masdar Institute of Science and Technology Masdar City, Abu Dhabi, United Arab Emirates
2004-2011	Chair, Board of Directors STC.UNM ( <i>formerly</i> The Science and Technology Corporation @ UNM)
2001-2009	Dean, School of Engineering University of New Mexico
2000-2001	Interim Dean, School of Engineering University of New Mexico
1994-2000	Chair, Department of Chemical and Nuclear Engineering University of New Mexico
1991-1994	Director, New Jersey SEMATECH Center of Excellence for Plasma Etching, New Jersey University Consortium
1987-1994	Director, Graduate Program in Plasma Science and Technology School of Engineering, Princeton University

- 1987-1994 Head, Plasma Processing Group, Plasma Physics Laboratory  
Princeton University
- 1979-1987 Head, Materials Physics Group, Plasma Physics Laboratory  
Princeton University

## TEACHING AND RESEARCH

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- 2014-present Professor of Chemical and Biological Engineering  
University of New Mexico
- 1994-2014 Professor of Chemical and Nuclear Engineering  
University of New Mexico
- 2011-2012 Professor of Engineering  
Masdar Institute of Science and Technology  
Masdar City, Abu Dhabi, United Arab Emirates
- 1988-1994 Lecturer with Rank of Professor, Department of Chemical Engineering  
Princeton University
- 1986-1988 Lecturer, Department of Chemical Engineering  
Princeton University
- 1984-1994 Principal Research Physicist, Plasma Physics Laboratory  
Princeton University
- 1978-1984 Research Physicist, Plasma Physics Laboratory  
Princeton University
- 1972-1978 Staff Physicist, Plasma Physics Laboratory  
Princeton University
- 1969-1972 Research Assistant to Professor Norman F. Ramsey  
Department of Physics, Harvard University
- 1969-1972 Teaching Fellow, Department of Physics  
Harvard University
- 1967-1968 Research Associate, Physics Division  
Argonne National Laboratory

## HONORS AND AWARDS

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- 2011 STC.UNM Lobo VentureLab Incubator Facility renamed the Joseph L. Cecchi VentureLab
- 2010 New Mexico Business Weekly, *Who's Who in Technology*
- 2009 Fellow of the American Vacuum Society (AVS)
- 2005 *Who's Who in Engineering Higher Education (WWEHE)*
- 2000 *Who's Who in Science and Engineering*
- 1992, 1994 Semiconductor Research Corporation Inventor Award
- 188 IBM Faculty Development Award
- 1968-1972 National Science Foundation Pre-doctoral Fellow
- 1970 Sigma Xi
- 1968 Phi Beta Kappa

## COURSES TAUGHT AND DEVELOPED

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### PRINCETON UNIVERSITY

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- ChE 346 *Chemical Engineering Laboratory*
- ChE 417 *Plasmas for Chemical Processing of Materials* (newly developed)
- ChE 422 *Semiconductor Processing Technology*
- ChE 441 *Chemical Reactor Engineering*
- ChE 444 *Special Topics in Chemical Engineering and Technology*
- ChE 454 *Senior Thesis*
- ChE 551 *Topics in Plasma Science and Technology* (newly developed)

### UNIVERSITY OF NEW MEXICO

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- ChNE 461 *Chemical Reactor Engineering*
- ChNE 486/586 *Statistical Design of Experiments for Semiconductor Manufacturing* (newly developed)
- ChNE 515 *Special Topics*
- ChNE 599 *Masters Thesis*
- ChNE 699 *Dissertation*
- ME 461 *High Performance Engines* (newly developed)
- ChNE 499/515 *Sustainable Energy* (newly developed)
- ChNE 213 *Laboratory Electronics*
- ChNE 419L *Senior Chemical Engineering Laboratory*
- BME 558 *Methods of Analysis in Biomedical Engineering*

## UNDERGRADUATE RESEARCH SUPERVISED

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### PRINCETON UNIVERSITY (CHEMICAL ENGINEERING)

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Michael R. Grillo (B.S., 1993), *An Historical Account of the Search for the Structure of Fullerenes*

Craig H. Boyce (B.S., 1994), *Mechanisms for Anisotropic Reactive Ion Etching of Photoresist via O<sub>2</sub>, N<sub>2</sub>/O<sub>2</sub>, and SO<sub>2</sub>/O<sub>2</sub> Plasmas*

### UNIVERSITY OF NEW MEXICO (CHEMICAL ENGINEERING)

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Frank B. Lopez, (1995), *Design of Experiments for Optimization Study of Oxide Etch*

James J. Chambers, (1995), *Optimization of a Plasma Etch Process Utilizing Statistical Design and Analysis of Experiments with Response Surface Methodology*

Jennifer Drez, (1996,) *Modeling the Growth of a CF<sub>x</sub> Polymer on Silicon Wafers*

David L. Temer, (1996), *A Correlation Between  $CF_x$  In the Plasma Environment To Index of Refraction*

Zachary J. Walster, (1996), *Polymer Deposition for Selective Oxide Etching Using HFC-134a*  
Tara Martinez, (1997), *The Characterization of Si Wafers Using A Scanning Electron Microscope*

Stacy Dunivan, (1997), *Statistically Designed Experiment to Determine Defect Generation of a Lithographic Process*

Jason Bradley, (1998), *Optimization of Chemical Mechanical Planarization*

Karla Waters, (1998), *Parameter Space for Oxide Etching Using the Lucas Labs Cluster Tool*

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## GRADUATE RESEARCH SUPERVISED

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### PRINCETON UNIVERSITY (CHEMICAL ENGINEERING UNLESS OTHERWISE NOTED)

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Shashank Chattervedi (PhD, 1989), *Energy Flows in a Quasi-Isobaric Fusion-Fission Hybrid Reactor*

James Cross (MS, 1990), *Introductory Survey of Modeling Strategies for Process Plasmas*

Dwani Vyas (MS, 1991), *Global Modeling of the Electron Cyclotron Resonance Reactor*

Mark Bannister (Astrophysical Sciences, PhD, 1992), *A Surface Wave Sustained Plasma Source of Supersonic Nozzle Beams of Metastable Argon Atoms (the "Surfajet")*

C.W. Cheah (PhD, 1993), *Plasma Diagnostics for the Characterization of Etching and Deposition Reactors*

Chris Zuiker (Astrophysical Sciences, PhD, 1993), *Laser-Induced Fluorescence Measurements in an Electron Cyclotron Resonance Plasma Etch Reactor*

Y-C Huang (PhD, 1994), *Characterization of Surface Reaction During  $SF_6$  Etching of Silicon in an Electron Cyclotron Resonance (ECR) Plasma Reactor*

Rob Goheen (MS, 1995), *In-Situ Analysis of A Plasma Deposited Polymer Film in a  $CF_3H$  Discharge Using Reflection Infrared Spectroscopy*

Rob Jarecki (PhD, 1996), *Low Temperature Sulfur Hexafluoride Plasma Etching of Silicon/Silicon Dioxide in an Electron Cyclotron Resonance Reactor*

Mark Sowa (PhD, 1998), *Mechanism for the Selective Etch of Silicon Dioxide in a High-Density, Low-Pressure, Inductively Coupled Fluorocarbon Plasma*

Served on an additional 5 PhD dissertation committees

UNIVERSITY OF NEW MEXICO (CHEMICAL ENGINEERING UNLESS OTHERWISE NOTED)

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Vinay Pohray (MS, 1997), *Role of Polymer Growth and Ion Bombardment of Selective Oxide Tech Chemistry in an Inductively Coupled Plasma Reactor*

Craig Brown (MS, 1998), *Plasma Polymerized Fluorocarbon (CHF<sub>3</sub>) Thin Films Optimization and Characterization for the Elimination of Post Release Adhesion in Polysilicon Microstructures*

David Stein (PhD, 1998), *Mechanistic, Kinetic, and Processing Aspects of Tungsten Chemical Mechanical Polishing*

Michael Littau (MS, 1998), *Wavelength Modulated Infrared Diode Laser Absorption Spectroscopy of Fluorocarbon Species in a Low-Pressure, High-Density Plasma Reactor*

Iyano Inoue (MS, 1999), *Applications of Infrared Diode Laser Absorption Spectroscopy to Measurements of Dissociation Kinetics and Calibration of Actinometric Optical Emission Spectroscopy*

Prabhakar Gopoldasu (MS, 2000), *Response Surface Modeling of the Composition of AlAsSb Alloys Grown by Molecular Beam Epitaxy*

Yong Xiang Guo (MS, 2001), *Modeling of a Fluorocarbon-based Process for Selective Etching of Interlevel Dielectrics*

Amy Moy (MS, 2001), *Polishing Pad Degradation and Wear Due to Tungsten and Oxide CMP*

Todd Bauer (PhD, 2001), *Fluorocarbon Radical Density Measurements in an Inductively Coupled Plasma Reactor*

Stacy Stone (Manufacturing Engineering, ME, 2002), *Feasibility of Printing 185 nm Nested Contact Holes at 320 nm Pitch with a 0.60 NA 248 nm KrF Lithography Source*

Xiaomei Wu (PhD, 2003), *Study of Rotational Temperature and Loss Mechanisms of Fluorocarbon Radicals in an Inductively Coupled Plasma Reactor*

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