Keith M. Axler, Ph.D., PMP
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Technical Expertise
Dr. Axler has over 28 years of combined experience in engineering management, program development, materials research, and computer modeling of chemical processes. In addition, he has over 9 years of part-time college teaching experience and student mentorship in STEM education.

He is an expert in computer modeling of complex multicomponent systems, and the structure/processing/properties relationships of materials. He is recognized as a foremost authority within the US DOE complex on materials aging and the manufacturing technologies used in production of engineered alloys. He is a PMI certified Project Management Professional with many years of experience in fiscal and line management of large research programs.

Education
Ph.D., Materials Science, Colorado School of Mines
M.S., Materials Science, Colorado School of Mines
Masters Certification in Project Management, George Washington University
B.S., Chemistry, State University of New York, Cortland

Employment in Materials and Chemistry R&D
2012-Present: Consultant, TechSource Inc.
As a consultant, Dr. Axler provides thermodynamic modeling, technical assessments of electrochemical operations, and guidance in the safe disposition of toxic chemicals consistent with all regulations.

2007-2012: Group Leader, Process Engineering Group, Southwest Research Institute
Dr. Axler conducted engineering analyses and aging evaluations of electric power plants. He led a team of materials scientists and engineers in testing and evaluation of long-term containment of corrosive chemicals.

1980-2007: Staff Member, Project Leader, Group Leader, Los Alamos National Laboratory.
Dr. Axler has held a range of technical and managerial positions involving equipment deployment, manufacturing operations, and corrosion research. His research in waste minimization for manufacturing and determining the phase behavior of alloy and ceramic systems are well documented (see attached publication list). His activities included:
Authoring numerous operating procedures and providing training to technicians and technical staff on the full range of metal processing operations conducted at Los Alamos

Managed personnel in teams ranging from 27 to 80+ employees

Conduced fiscal accounting for large research portfolios (up to $25M/yr.) and served as liaison to numerous government and industrial clients.

Performed plutonium storage activities and accounting of nuclear materials inventories at both CMR and TA-55.

Designed and deployed laboratory and plant scale work stations for manufacturing engineered alloys

Installed industrial furnaces and inspection equipment, and conducted process prove-in testing and commissioning of a range of complex manufacturing operations.

Co-authored the Site-Wide Environmental Impact Statement for manufacturing at Los Alamos National Laboratory.

Also during this period, Dr. Axler served as the LANL Project Leader for Enhanced Surveillance of Nuclear Weapons and the Chairman of the US/UK Trident Warhead Program Group.

7/2007 – 6/2011: Group leader for Corrosion Science, Southwest Research Institute

Conducted technical assessments of commercial nuclear power plants to track aging trends and verify compliance with safety regulations as a contractor to the US NRC.

Conducted technical assessments of containment systems in use for spend nuclear fuel storage.

Directed the activities of engineering staff members and reported verbally and via written reports to all external stakeholders and clients. This included over 100 technical reports to the US Nuclear Regulatory Commission on assessments of transportation methods, roadway accidents, and the management of aging at commercial power plants.

Teaching and Student Mentorship Experience

Dr. Axler has taught college-level Thermodynamics, Materials Engineering, and Chemistry to over 480 students at several universities. He also has many years of experience training technical operators to perform in scientific careers and has specialized in a teaching method to accommodate at-risk college students and students from underrepresented demographics. He has taught large size classes and conducted tutoring of ASM-accredited General Chemistry and ABET accredited Engineering coursework.

He is presently a Part-time Lecturer in the department of Mechanical Engineering, UTSA, San Antonio, TX. Previous experience in STEM teaching includes:

2015- 2017: Part-time Adjunct Professor, Schreiner University, Kerrville, TX
Taught lectures and laboratory courses in Physical Chemistry/Thermodynamics and Introductory Chemistry (lab and lecture)

1995-1999: Adjunct Professor in the Departments of Chemical Engineering and Mechanical Engineering, University of New Mexico.
Taught 300-level and 500-level Materials Engineering courses.

Additional Academic Activities
9 years as an Adjunct Professor of Metallurgical and Materials Engineering, Colorado School of Mines whereat he established funding and directed graduate and undergraduate research in a range of engineering studies relating to manufacturing operations.

Charter Member of the Board of Directors in the Advanced Coatings and Surface Engineering Laboratory; a consortium of 25 industrial partners with the Colorado School of Mines.

Professional Awards
2000 Certificate of Recognition by the Los Alamos Hispanic Employee Working Group for mentorship and career advancement of Hispanic employees.

1995 Los Alamos National Laboratory Recognition of Excellence in Industrial Partnerships.

1993 LANL Waste Minimization Award, for implementing reusable hardware in corrosive service environments.

Publications and Presentations
Dr. Axler authored and co-authored over 40 technical papers in Materials Engineering and processing equipment design topics. He has presented over 30 professional talks at national and international conferences. In addition, and he has chaired and co-chaired over 25 international scientific meetings.

Publications List

K.M. Axler, et al, “Structural Materials Analyses of the Newhall Pass Tunnel Fire”, US Nuclear Regulatory Commission NUREG/CR-7101, June 2011.

K.M. Axler, E.M. Foltyn, D.E. Peterson, and W.B. Hutchinson, "Phase Investigations of the Al-Ir System", Journal of the Less Common Metals, 156, 1989.

K.M. Axler, E.M. Foltyn, and J. Espinoza, "Production and Examination of $CsPu_2Cl_7$", Journal of Nuclear Materials, 178, 1991.

P.C. Lopez, K.M. Axler, G.L. DePoorter, R.A. Pereyra, "Processing and Characterization of Engineered Materials in the Tantalum-Carbon system", Proceedings of the 1st International Conference on Processing of Materials for Properties, 1993.

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K.M. Axler, G.D. Bird, and P.C. Lopez, "Evaluation of Corrosion Resistant Materials for Use in Pyrochemistry", Proceedings of the 180th Meeting of the Electrochemical Society, 1991.

K.M. Axler and R.I. Sheldon "The Effect of Initial Composition on PuOCl Formation in the Direct Oxide Reduction of PuO_2" Journal of Nuclear materials, 187, 183-185, 1992.

K.M. Axler and R.B. Roof, "The Structure of K_2PuCl_5", Journal of Nuclear Materials, 189, 1992.

K.M. Axler, N.J. Pugh, T.G. Chart, H. Daniels, G.S. Perry, "Calculated Phase Equilibria for the $CaCl_2$-KCl-$MgCl_2$ System" National Physical Laboratory

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K.M. Axler and R.B. Roof, "Structural Examination of Iridium-Based Single Crystal Preparations", Advances in X-Ray Analysis, Vol.29, 1986.

P.D. Kleinschmidt and K.M. Axler, "The Free Energy of Formation of $CsCaCl_3$", High-Temperature Science, Vol. 28, 127, 1990.

K.M. Axler, E.M. Foltyn, D.E. Peterson, R.I. Sheldon, and W.B. Hutchinson, "The Plutonium-Magnesium System", Journal of Nuclear Materials, 161, 1989.

L.M. Bagaasen, G.L. DePoorter, K.M. Axler, "Investigations of Coated Refractory Metals for Plutonium Processing", Transactions of the American Nuclear Society, 62, 240, 1990.

K.M. Axler, “Tantalum-base Composite Solves Corrosion Problem”, Advanced Materials & Processes, Vol. 149,6, 1996.

E.M. Foltyn, R.N. Mulford, K.M. Axler, J.M. Espinoza, and A.M. Murray, "Thermodynamic Modeling and Experimental Investigations of the CsCl-$CaCl_2$-$PuCl_3$ System", Journal of Nuclear Materials, 178, 93-98, 1991.

J.D. Cotton, K.M. Axler, P.C. Lopez, J.H. Steele, J.I. Archuleta, "Nature of Dissolution of Binary Tantalum-Titanium Alloys by Molten Plutonium", in ACTINIDE PROCESSING: Methods and Materials (1994), eds. B. Mishra and W.A. Averill, 1994.

K.M. Axler, H.D. Ramsey, R.I. Sheldon, L.E. McCurry, "Thermochemical Modeling and Verification Testing of the Plutonium Electrorefining Process", Los Alamos National Laboratory Report LA-11802-MS, 1990.

K.M. Axler and D.E. Peterson, "The Calcium-Plutonium System", Bulletin of Alloy Phase Diagrams, Vol.10, 4, 1989.

M.W. West and K.M. Axler, “Thermodynamics of the Conversion of Calcium and Magnesium Fluorides to the Parent Metal Oxides and Hydrogen Fluoride”, Los Alamos Report LA-13232-MS, 1997.

K.M. Axler and D.T. Eash, "High-Temperature Compatibility Study of Iridium (DOP-26 Alloy) with Graphite and Plutonia", Los Alamos Report LA-11127-MS, 1987.

T.G. George, R.E. Tate, K.M. Axler, "General-Purpose Heat Source Development: Safety Verification Test Program" Los Alamos Report LA-10364-MS, 1985.

K.M. Axler and E.M. Foltyn, "High-Temperature Compatibility Testing of Refractory Crucible Materials: TaC, Y_2O_3, Y_2O_3-Coated MgO, and BN", Los Alamos National Laboratory Report LA-11586-MS, 1989.

P.C. Lopez, T.R. Jarosch, K.M. Axler, R.A. Pereyra, G.T. Chandler, S.D. Fink, J.E. Marra, D.F. McLaughlin, "Investigation of Silicon Nitride Performance in Plutonium Pyrochemistry", Los Alamos National Laboratory Report LA-12322-MS, 1992.

P.C. Lopez, W.J. Griego, K.M. Axler, D.L. DePoorter, R.A. Pereyra, "Current Studies in Materials Development for Plutonium Pyrochemistry", Proceedings of the International Symposium on Actinides: Processing & Materials, 1994.

S. Owens, K. Axler, G. Bird, H. Reimus, E. Garcia, G. DePoorter, "Investigations at Los Alamos National Laboratory of Calcium Chloride Based Molten Salts", Proceedings of the 8^{th} International Symposium on Molten Salts, The Electrochemical Society Press, Gale and Blomgren (eds.), 1992.

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