JOHN ALLEN RUDESILL

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OBJECTIVE:

Consulting position with clients who have needs for energy and material technology expertise involving all aspects of highly porous hydrous metal oxide invention, synthesis, process development, process engineering and design, product application, testing, and business development strategy.
Qualifications include:

- Over 30 years experience in new product and process R & D. Manufacturing supervision and R & D project leadership with W.R. Grace. Proven abilities in invention, innovation, project leadership, trouble-shooting, and technical strategic planning.
- Co-invented new processes and materials leading to 21 US patents.
- Led the start-up and redesign of the first new generation FCC Catalyst plant that became the foundation for a product line with over $300+ million in current annual sales.
- Actively reduced the manufacturing costs and improved the performance of main FCC Catalyst products by inventing new more efficient processes to make and deliver key raw materials into the catalyst manufacturing process.
- Committed to creating and maintaining a safer and environmentally clean work place.
- Provided on-the-job training and mentoring to plant personnel, technicians, and junior scientists as needed.
- Prepared and delivered both written and oral communications as needed.

RELEVANT SKILLS

Inventorship and Technical Strategic Planning

- Co-inventor of several patented NOx reduction additives for FCCU that has made W.R. Grace, Inc. the world leader in this technology; now worth ~$10 million in annual sales. Perceived need for and invented partial burn FCCU NOx additive that works by reducing NOx precursor ammonia.
- Recognized opportunity for integrated low cost high purity peptizable alumina suitable for FT supports and was primary inventor for such a process with valuable commodity co-product.
- Primary or co-inventor of trade secret and patented processes to make lower cost low coke and active matrix FCC aluminas to meet competitive challenges and cost objectives saving ~$3 million annually.
- Primary inventor of zero discharge zeolite manufacturing process.
- Co-inventor of patented processes to make YBC 123 high TC superconductor powders that gave W.R. Grace a cutting edge technology profile in the late ‘80’s and early ‘90’s.
- Contributed several innovations that reduced waste byproducts and dust emissions resulting in ongoing annual savings ~$15 million.
- Helped draft patents and co-author technical articles; presented papers at ACS national meetings.

Project Leadership and Innovation

- Personally developed and implemented innovative process to recover valuable by-product from zeolite synthesis enabling new catalyst process technology to go forward; saving ~$10 million per year ongoing.
- Developed methods for recovery of product fines from waste water stream solids into finished product; thus relieving a costly environmental liability and saving ~$5-10 million annually ongoing.
- Developed innovative methods for direct reslurry of bulk powders from pneumatic rail cars and truck trailers. The methods were adopted at several Grace plants simplifying logistics and reducing demurrage resulting in ongoing savings of ~$1-2 Million annually for Grace.
- Developed innovative methods for continuous addition of key dry raw materials into water based process streams leading to higher solids to drying steps and annual cost savings in natural gas worth $2-4 million.

Problem Solving and Trouble-Shooting

- Helped Manufacturing staff resolve quality and process efficiency issues with expected results of lower manufacturing costs and improved quality through innovations described in items above.
- Overcame operational difficulties at catalyst manufacturing plants to facilitate successful introduction of new products that required new process configurations.
- During start-up of new zeolite plant, diagnosed several key equipment deficiencies that were not addressed by suppliers; recommended effective design changes in the equipment that were successfully implemented.

PROFESSIONAL EXPERIENCE

CONSULTING SERVICES: **2008 – Present**

Provided proprietary client chemical plant process and capability including diagrams and economics.
Prepared proprietary client subscribed report section in process development pilot catalytic reaction area.
Provided catalyst and adsorbents process know how and cost models to high tech and market research companies.

UNIVERSITY OF MARYLAND BALTIMORE COUNTY—Chemical, Biochemical & Environmental Eng. Dept**. 2007 – Present**

Adjunct Instructor – Built and teach "Chemical Process Development" a senior elective course.

W.R. GRACE, DAVISON DIVISION **1973 – 2004**

Principal R&D Engineer – FCC Products, Columbia, MD 1987 – 2004

Inventor/innovator for: new FCC catalysts, pioneering cost-effective raw materials and processes, new additives for NOx and gasoline sulfur reduction. Co-inventor of processes for high temperature superconductor synthesis. Several patents and trade secrets resulted from these activities. Contributed to manufacturing process optimization projects on numerous occasions. Proposed and demonstrated a unique new zeolite manufacturing process chemistry with zero wastewater discharge.

Senior R&D Engineer – FCC Products, Baltimore & Curtis Bay, MD 1975 – 1987

Developed new processes to facilitate commercialization of new FCC catalyst compositions in existing plants. Contributed several key innovations for handling difficult materials and by-product recycling issues. Supervised start-up of first commercial plant to make new generation of FCC catalysts now worth ~$300 million in annual sales. As process trouble-shooter, developed cost reduction innovations with significant ongoing benefits to employer.

Catalyst Plant Process Engineer – FCC Catalyst Plant, South Gate, CA 1973 – 1975

Monitored product quality and process performance, directed daily production scheduling, and set process quality parameters for zeolite synthesis and catalyst manufacturing. Contributed several cost reduction innovations that markedly increased plant operating efficiency. Completed first audit of plant process.

UNIVERSAL PROPULSION CO., Riverside, CA. **1972 – 1973**

Research Chemical Engineer: Did R & D, testing, scale-up, and fabrication of revolutionary new igniter system for the USAF 500 lb firebomb effective for high angle of attack delivery. Ran Q & A burn rate tests on solid propellants.

EDUCATION & PROFESSIONAL

BSChE, California State Polytechnic University Pomona, 1971
12 Credits toward MBA Johns Hopkins Night College 1985
Continuing extensive self education in the areas of energy, environment, climate, health, and medicine
Member of ACS, AIChE, AAAS, and Cal Poly Alumni.

TRAINING

Design for Six Sigma Green Belt, 2001
Grace Management Practices Course I, 1994
Completed company provided training in safety practices, quality management, and patent law

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Curriculum Vitae

Patents:

US 7,976,697 Rudesill, J A; Yaluris, G; Krishnamoorthy, M S; Ziebarth, M S; Lussier; R J; GRACE & CO-CONN WR. NOx reduction compositions for use in partial burn FCC processes

US 7,909,986 Rudesill, J A; Yaluris, G; GRACE & CO-CONN WR
Reduction of gas phase reduced nitrogen species in partial burn FCC processes

US 7,906,015 Rudesill, J A; Yaluris, G; GRACE & CO-CONN WR
Reduction of gas phase reduced nitrogen species in partial burn FCC processes

US 7,780,395 Rudesill, J A; Yaluris, G; Krishnamoorthy; M S; Dougan; Timothy, D, legal representative; Katherine W; GRACE & CO-CONN WR. Method for controlling NO.sub.x emissions in the FCCU

US 7,695,611 Rudesill, J A; Yaluris, G; GRACE & CO-CONN WR
Reduction of NO.sub.x emissions in full burn FCC processes

US 7,307,039 Yaluris; G; Rudesill; J A; Suarez; W**;** GRACE & CO-CONN WR
NOx reduction compositions for use in FCC processes

US 7,030,055 Rudesill, J A; Yaluris, G; GRACE & CO-CONN WR
NOx Reduction compositions for use in FCC Processes

US 6,881,390 Rudesill, J A; Yaluris, G; GRACE & CO-CONN WR
NOx Reduction compositions for use in FCC Processes

US 6660683 Rudesill, J A; Yaluris, G; GRACE & CO-CONN WR
NOx Reduction compositions for use in FCC Processes

US 6635168 Cheng, W; Rudesill, J A; et al; GRACE & CO-CONN WR
Gasoline sulfur reduction catalyst for fluid catalytic cracking process

US 6379536 Peters, A W; Rudesill, J A; et al; GRACE & CO-CONN W R
Compositions comprising a component containing (i) an acidic oxide support, (ii) an alkali metal and/or alkaline earth metal or mixtures thereof, (iii) a transition metal having oxygen storage capability, and (iv) a transition metal selected from Groups Ib and/or IIb of the Periodic Table provide NOx control in FCC processes.

US 6280607 Peters, A W; Rudesill, J A; et al; GRACE & CO-CONN W R
Compositions comprising a component containing (i) an acidic oxide support, (ii) an alkali metal and/or alkaline earth metal or mixtures thereof, (iii) a transition metal having oxygen storage capability, and (iv) a transition metal selected from Groups Ib and/or IIb of the Periodic Table provide NOx control in FCC processes.

US 6165351 Cheng, W; Laine, N R; Rudesill, J A; GRACE & CO-CONN W R
Silica bayerite/eta alumina composition for use in fluid cracking catalyst.

US 6143167 Peters, AW; Rudesill, J A; et al; GRACE & CO-CONN W R
Compositions comprising a component containing (i) an acidic oxide support, (ii) an alkali metal and/or alkaline earth metal or mixtures thereof, (iii) a transition metal having oxygen storage capability, and (iv) a transition metal selected from Groups Ib and/or IIb of the Periodic Table provide NOx control in FCC processes.

US 6129834 Peters, A W; Rudesill, J A; et al; GRACE & CO-CONN W R
Compositions comprising a component containing (i) an acidic oxide support, (ii) an alkali metal and/or alkaline earth metal or mixtures thereof, (iii) a transition metal

having oxygen storage capability, and (iv) a transition metal selected from Groups Ib and/or IIb of the Periodic Table provide NOx control in FCC processes.

US 5306417 Cheng, W; Rudesill, J A; GRACE & CO-CONN W R
Catalytic cracking of hydrocarbon(s) to gasoline and diesel prods. Utilizes silica modified bayerite and or eta alumina-contg. catalyst.

US 5304526 Cheng, W; Laine, N R; Rudesill, J A; GRACE & CO-CONN W R
Silica contg. bayerite or eta alumina as hydrocarbon cracking catalysts -- are used as prepd. by reacting aq. solns. of sodium aluminate, sodium silicate and aluminum sulphate with prod. obtd. as ppte.

US 5147836 Cheng, W; Laine, N R; Rudesill, J A; GRACE & CO-CONN W R. Catalytic cracking catalysts with hydrothermal stability and metal tolerance -- incorporate silica modified bayerite and or eta alumina.

US 5149682 Pan, W H; Rudesill, J A; Spencer, N D; GRACE & CO-CONN W R High purity oxide superconductor -- made by forming mixed metal carbonate ppte. from soln. of metal salts and quaternary ammonium carbonate and calcining.

US 5023067 Pan, W H; Rudesill, J A; Spencer, N D; GRACE & CO-CONN W R
Manufacturing Method for Ceramics and Products Thereof

EP 396031 Lundsager, C B; Pan, W H; Rudesill, J A; Spencer,N D; GRACE & CO-CONN W R Method and compsn. for forming superconducting ceramics -- by forming plastic blend of superconducting particles, polymer and plasticiser, shaping and firing.

EP 229609 Rudesill, J A; GRACE & CO-CONN W R Catalyst component contg. ZSM-5 in inorganic oxide matrix used as additive to FCC catalyst contg. type Y zeolite in inorganic matrix, enhancing octane number.

US 4542118 Nozemack, R J; Rudesill, J A; Denton, D A; Feldwick, R D;
GRACE & CO-CONN W R FCC catalyst process using ammonia to precipitate the aluminum chlorhydrol binder followed by washing and drying.

Publications:

Rudesill, J.A., "An Interview with Dr. Edmund Storms Author of *The Science of Low Energy Nuclear Reaction*", a feature article in "Infinite Energy", Issue #75, 2007, pages 12-15.

Rudesill, J.A., "DOD Forum *Conversations About Energy*", a news item in "Infinite Energy", Issue #71, 2007, page 32.

Rudesill, J.A., "A Summary of the Second International Conference on Future Energy", an article in "Infinite Energy", Issue #70, 2006, pages 13-17.

Rudesill, J.A., "Insisting on Honest and Accurate Science: A review of *An Inconvenient Truth* ", an article in "Infinite Energy", Issue #69, 2006, pages 21-23.

Rudesill, J.A., "Greenhouse Gas Effects on Global Climate: Water Vapor vs. Carbon Dioxide", an article in "Infinite Energy", Issue #65, 2006, pages 19-22.

Rudesill, J.A., "The Role of Technology in Meeting Current and Future Petroleum Energy Demand", an article in "Infinite Energy", Issue #60, 2005, pages 18-25.

Rudesill, J.A., Cheng, W; Langan, L; Krishnaiah, G. "Oxygen Partial Pressure Effects on Vanadium Mobility and Catalyst Deactivation in a Simulated FCC Regenerator". Paper given by Rudesill at the ACS Annual

Publications: cont.

Symposium of "Advances in FCC" fall meeting New York, NY, September 2003. Issued as a chapter in Fluid Cracking Catalysts VI: Preparation and Characterization of Catalysts.

Zhao, X., Cheng, W., Rudesill, J.A. "FCC Bottoms Cracking Mechanisms and Implications for Catalyst Design for Resid Applications". Paper given by Zhao at NPRA 2002 Annual meeting March 17-19, 2002 Marriott Rivercenter Hotel San Antonio. TX.

Rudesill, J.A., Cheng, W., Zhao, X. "The Role of Contaminant Metals in Fluid Catalytic Cracking Reactions: The Effect on Product Boiling Point Distribution and Chemical Compositions". Paper given by Rudesill at the Spring 2001 ACS Annual Symposium of "Advances in FCC" in San Diego, CA.

Rudesill, J.A., Peters, A.W. "The Effect of the Oxidation State of Vanadium on the Selectivity of Fluid Cracking Catalysts". Paper presented by Rudesill at the ACS Fourth Annual Symposium of "Advances in FCC" spring meeting New Orleans, LA, 1996. Issued as a chapter in Fluid Cracking Catalysts series.

Boock, L.T., Petti, T.F., and Rudesill, J.A. "Recent Advances in Contaminant Metal Deactivation and Metal Dehydrogentation Effects During Cyclic Propylene Steaming of FCC Catalysts". Paper presented by Boock at ACS International Symposium on the Deactivation and Testing of Hydrocarbon Conversion Catalysts Chicago, IL, 1995.

Rudesill, J.A., Wormsbecher, R.F., and Peters, A.W. "Hydrothermal Dealumination Kinetics and a Mechanism for the Formation of Mesopore Structures in Faujasite". Poster given at the 12th Northern American Meeting of the Catalysis Society, Lexington, KY, 1991

Spencer, N.D. and Rudesill, J.A. "Synthesis and Properties of $LaBa_2Cu_3O_x$
Derived from Didymium and Other Rare Earth Mixtures". Poster given by Spencer at
"Eighteenth Rare Earth Research Conference" Lake Geneva, WI. 1988.