SUBODH DAS, PhD, MBA, PE

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Subodh Das Wikipedia Page: https://en.wikipedia.org/wiki/Subodh_Das
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Finalist for S&P Global Metal Platt's Lifetime Achievement Award
https://gma.platts.com/Finalists/Finalists2020

Overall Credentials

Light metals (aluminum, magnesium, and titanium) and critical & rare earth metals technology & marketing expert/thought leader for research & development, market differentiated product & IP protected process innovation/commercialization at manufacturing & customers plants, aluminum primary/scrap based secondary/fabricated products & processes. A 45+ year veteran of the global aluminum industry from bauxite mining to alumina refining to aluminum smelting to melting/casting to aluminum fabrication to product/alloys/process (automotive, aerospace, packaging) development/commercialization to scarp processing and recycling. As a part of Logan aluminum start-up team (Russellville, Kentucky) through ARCO aluminum (now Tri-Arrows) participated in the creation of a $4 billon aluminum rolling business and led the qualification of rolled aluminum products at global customers. Founded and managed Secat aluminum research center in Lexington at the University of Kentucky. Founded and currently managing Phinix, LLC, a high-tech small entrepreneurial company serving global primary, fabrication and scrap-based secondary aluminum and light metals industries. Dr. is also a registered aluminium specialist /expert for the Aluminium Stewardship Initiative. https://aluminium-stewardship.org/subodh-das/. Dr. Das has also served as an expert witness in several legal depositions.

Career Summary

Dr. Das is globally recognized and respected serial intrapreneur and entrepreneur in industrial/ academic/technology-based small companies, founder and manager of several aluminum research consortia involving multi-disciplinary collaborations involving industry, universities, and U.S. national laboratories.
He is also an inventor (holder of 20 US patents), researcher, technology visionary, research manager, commercializer, analyst, investment advisor, thought leader, expert and consultant to the global light metals (aluminum, magnesium, titanium, lithium) industries, specializing in the areas of aluminum technology generation and diffusion, recycling, scrap sortation, manufacturing, carbon management & sequestration and new product & process developments. He is a well-recognized and connected expert in the entire aluminum supply chain from "mine to market" with special emphasis on leading manufacturing, research and development teams towards commercial implementation, with special emphasis on downstream processing.
Dr. Das has worked in manufacturing (25 years including Alcoa and Logan Aluminum, JV owned by Novelis and Tri-Arrows), academic (8 years at The University of Kentucky, Lexington, Kentucky) and entrepreneurial (12 years – forming 6 research consortia and companies) settings. He is a prolific writer of papers and books and frequent invited presenter at international conferences and an active LinkedIn contributor, blogger, and twitter.

Education

Ph.D. Metallurgical Engineering – The University of Michigan, MI (1974)
MBA Corporate Planning – University of Pittsburgh, Pittsburgh, PA (1982)
Executive Development Program - University of Tennessee, Knoxville, TN (1992)
M. Tech. Metallurgical Engineering – Indian Institute of Technology, Kanpur, India (1972)
Professional Engineer Commonwealth of Kentucky since 1985

Employment

2008- Present: CEO & Founder, Phinix, LLC, Saint Louis, Missouri

Providing research and development, global thought leadership and consulting services for the aluminum, magnesium and titanium processes & products, energy efficiency & conservation, recycling, scrap sortation & sustainability. Commercializing technologies on scrap sortation and recovery of magnesium, titanium, and lithium from aluminum scrap.

1999-2008: CEO, Secat Inc., Director, Center for Al Technology, Executive Director, Sloan Industry "Center for a Sustainable Al Industry", Adjunct Professor, Univ. of Kentucky

Secat – Founder - for commercial technical research with intellectual property protection providing a forum to serve needs of over 100 global aluminum companies in downstream and casting sectors. Raised over $20 million from industries, universities, state and federal governments.

CAT- Founder – for academic-industry - governmental (State of KY and US DOE) center dedicated to conducting basic and applied research for the global aluminum industry

CSAI- Founder- Working with the University of Kentucky's Gatton School of Business, Alfred P. Sloan Foundation's Sloan Industry Center for Sustainable Aluminum Industry (CSAI).

Adjunct Professor - Lectured and supervised and mentored several students leading to bachelors, masters, and doctoral degrees.

1981-1999: ARCO Aluminum, Louisville, KY, Vice President Technology & Quality

1981-1983 – Anaconda Aluminum in Tucson, AZ – primary aluminum smelting process development, plant technical & environmental support for plants in Colombia Falls, Montana and Sebree, Kentucky. Development and commercialization of high-purity alumina process for electronic applications – plant still operational in Tuscon, AZ.

1983-1993 – ARCO Metal in Louisville, Kentucky - activities were involved with management & manufacturing aspects of alumina refineries (Joint Ventures in Jamaica and Ireland) and divestiture activities for remaining environmental and commercial follow-up for ARCO Metal two alumina refineries and two aluminum smelting plant in Columbia Falls, Montana and Sebree, Kentucky .

1985-1999 - ARCO Aluminum in Louisville, Kentucky – building and qualifying aluminum rolling plant (Logan Aluminum in KY) and developing and commercializing ARCO Aluminum's $4 billion can sheet business. Led product development, customer qualification and market commercialization of aluminum beverage can sheet products produced from Logan mill.

1974-1981: Aluminum Company of America, Pittsburgh, Pennsylvania, Senior Scientist

1974-1979 - Focused on improving & implementing existing and developing new aluminum Alcoa Smelting Process and carbon electrode technologies at bench (Alcoa Technical Center, Pittsburgh, PA), pilot (Knoxville, Tennessee), and commercial (Anderson County, Texas) levels. Obtained 14 US patents for Alcoa. Several of the patented processes are still in commercial use at Alcoa plants worldwide.

1979-1981- Technology forecasting and planning for Alcoa research portfolio in conjunction with business units.

Awards and honors

Awards - USDOE - Leadership in Aluminum - US Department of Energy / OIT (1999)
TMS - Distinguished Service Award (2000)
ASM- Fellow - American Society of Metals International (2002)
Journal of Metals - Best Paper Award - "Aluminum Industry and Climate Change-Assessment and Responses" (2011).
TMS - Recipients of Extractive & Processing Division Technology award for "Recovery of Mg and Al-Mg alloys from Aluminum Scrap" (2019).
Finalists for S&P Global Platts Global Metals Awards for Lifetime Achievement (2019)
Board Membership - TMS (2001-2004), Lexington Chambers of Commerce (2002-2004) Secat, Inc. (1999-2008), Aluminum Association (2007-2008), Chairman of the Associate Membership Committee (2018-2019) leading to a board position (2022)
Current Membership - TMS, ASM, Aluminum Association, NADCA, AFS, ISRI, AEC
DOE / DoD Research Consortia Industrial Membership (LIFT, REMADE, CMI)
Publications and Significant Presentations (over 50 publications/presentations)
Books (6 Books on aluminum metallurgy and substantiality)
R&D Contracts (over $20 Million) from the U. S. Department of Energy (Dr. Subodh Das as PI)
US Patents (20 patents in Aluminum and its alloys extraction, recycling alloy development and fabrication and aluminum scrap sorting)

Selected U.S. Patents (many have corresponding awards in many countries)

1) US 10,557, 207 U.S. (Divisional Patent) - "Electrorefining of Magnesium from Scrap Metal Aluminum or Magnesium Alloys", (2020)
2) US 10,207, 296, B2 - "Material Sorting System- Aluminum Alloys Scrap Sortation" (2019)
3) US 10,017,867 B2 - "Electrorefining of Mg from Scarp Aluminum or Magnesium Alloys", (2018)
4) US 8,992,661 - "Production of Aluminum alloys using of feed impurities" (2015)
5) US 8,776,518 - "Method for the Elimination of Release of Atmospheric Carbon Dioxide and Capture of Nitrogen from the Production of Electricity by In-situ Combustion of Fossil Fuels" (2014)
6) US 5,104,459 - "Method of Forming Aluminum Alloy Sheet" (1992)
7) US 4,459,274 - "Chlorination Using Partially Claimed Carbonaceous Material as a Reluctant" for Aluminum Production (1984)
8) US 4,396,482 - "Composite Cathode" for Aluminum Production (1983)
9) US 4,308,115 - "Method for Producing Aluminum Using Graphite Cathode Coated with Refractory Hard Metal" (1981)
10) US 4,284,607 - "Chlorination of Aluminous Materials Using Solid Reducing Agents" (1981)
11) US 4, 259,161 - "Process for Producing Aluminum and Electrodes for Bipolar Cell" (1981)
12) US 4,179,346 - "Selective Use of Wet table and Non-Wet table Graphite Electrodes in Electrolysis Cells" Aluminum Production (1979)

13) US 4,179,345 - "Controlled Wet ability Graphite Electrodes for Selective Use in Electrolytic Cells" for Aluminum Production (1979)
14) US 4,121,983 - "Metal Production" Aluminum Production (1978)
15) US 4,115,215 - "Aluminum Purification" (1978)
16) US 4,105,752 - "Aluminum Chloride Production" (1978)
17) US 4,083,940 - "Coal Purification and Electrode Formation" for Aluminum Production (1978)
18) US 4,083,801- "High Purity Activated Carbon Produced by Calcining Acid Leached Coal, Containing Residual Leaching Solutions." for Aluminum Production (1978)
19) US 4,053,303 - "Method for Carbothermically Producing Aluminum-Silicon Alloys" (1977)
20) US 4,046,558 - "Method for the Production of Aluminum-Silicon Alloys" (1977)

Significant Publications / Presentations (selected from a list of over 50)

1."The Quest for Low Carbon Aluminum: Developing a Sustainability Index", Light Metal Age FEBRUARY 2021
2. "Carbon-Free Technology: Implications for Steel and Aluminum" Jacobs Annual Petcoke Conference (2019)
3. "Market Dynamics, Recycling and Recovery Magnesium from Aluminum Alloy Scarp" TMS (2017)
4. "Production of Magnesium and Aluminum-Magnesium Alloys from Recycled Secondary Aluminum Scrap Melts", Journal of Metals (2016)
5. "Production of Magnesium and Aluminum-Magnesium Alloys from Recycled Secondary Aluminum Scrap Melts" – REWAS TMS (2016)
6. "Use of Thermodynamic Modeling for Selection of Electrolyte for Electrorefining of Magnesium from Aluminum Alloy Melts" - Met. Trans. B (2016) – Best Technology award (2019)
7."Achieving Carbon Neutrality in the Global Aluminum Industry", Journal of Metals (2012)
8. "Strategy for a Sustainable Industry" - Aluminum International Today, July/August 2012
9."Aluminum Recycling in a Carbon Constraint World - Observations and Opportunities", Journal of Metals (2011)
10. "Aluminum Industry and Climate Change-Assessment and Responses" - Journal of Metals, February (2010) (Best JOM Paper Award -2011)
11. "Upcoming Carbon Management Legislations: Impacts and Opportunities for the Global Aluminum Industry "– TMS (2010)
12. "Aluminum Recycling in a Carbon Constrained World: Observations and Opportunities" TMS -LMD Aluminum Plenary Session (2010)
13. " Aluminum Recycling an Integrated Industry–Wide Approaches Recycle–Friendly Alloys, Recycling Indices and Carbon Management" - Engineering Solutions for Sustainability: Materials and Resources at AIME Conference in Lausanne, Switzerland, (2010)
14. "Aluminum Recycling-An Integrated, Industrywide Approach" - Journal of Metals (2010)
15. "Aluminum Industry and Climate Change: Assessment and Responses" TMS Annual Meetings (2009)

16. "Aluminum Recycling Index" - International Conference on Aluminum ICAA 11 Aachen, Germany (2008)
17. "Aluminum Recycling: Economic and Environmental Benefits" - Light Metal Age (2008)
18. "Formability Evaluation of Recycle-Friendly Automotive Aluminum Alloys" Society of Automotive Engineers (2008)
19. "Enabling Environmentally-Informed Materials Selection Decisions: Robustness of Early-Stage Lifecycle Assessment" - Sloan Foundation, Industries Studies, Conference (2008)
20. "Life-cycle Cost Analysis: Aluminum versus Steel in Passenger Cars" – TMS 2007
21. "Trends in the Global Aluminum Fabrication Industry" - Journal of Metals (2007)
22. "The Worldwide Aluminum Economy: The Current State of the Industry" - Journal of Metals (2007)
23. "The Development of Recycle-Friendly Automotive Aluminum Alloys" - Journal of Metals (2007)
24. "Recovering Aluminum from used Beverage Cans - the Dilemma of 900,000 Annual Tons" - Light Metals (2007)
25. "Identifying Scrap Friendly Alloys using Chance Constrained Modeling" Light Metals (2007)
26. "Recycling Aluminum Aerospace Alloys" - Light Metals (2007)
27. "Understanding Recycling Behavior in Kentucky: Who Recycles and Why" (2006)
28. "Improving Aluminum Can Recycling Rates: A Six Sigma Study in Kentucky"- Journal of Metals (2006)
29. "Aluminum Alloys for Bridges and Bridge Decks" - Light Metal Age (2006)
30. "Emerging Trends in Aluminum Recycling: Reasons and Responses" - Light Metals (2006)
31. "Designing Aluminum Alloys for a Recycle-Friendly World" - Light Metal Age, June (2006) . Also published in Materials Science Forum (2006) , over 50 citations
32. "Energy Implications of the Changing World of Aluminum Metal Supply" Journal of Metals (2004)

Selected Books (6 Books)

1) "Sustainability Gone Postal" Amazon.Com (2013)
2) "Aluminum Energy Technology - Conservation, Greenhouse Gas Reduction and Management, Alternative Energy Sources" Published by the Minerals. Metals and Materials Society (TMS), Warrendale, PA, USA (2010)
3) "Aluminum Alloys: Fabrication, Characterization and Applications" - Proceedings of the TMS Annual Meeting (2008)
4) "Aluminum Recycling and Processing" Edited by: John A.S. Green , Chapter 9, Published by American Society of Metals International, (2007)
5) "Aluminum Alloys Proceedings" of the TMS 1998 Annual Meeting: Aluminum Alloy for Transportation, Packaging, Aerospace and other application (1998)
6) "Automotive Aluminum Alloys Proceedings" of the TMS 1997 Annual Meeting, Automotive Alloys (1997)

Selected R&D Contracts ($30 Million) (Dr. Subodh Das as PI/Co-PI)

1. US DOE ARPA-E MIDAS program contract on Crucial Metals and Rare Earths "Recovery from Municipal Solod Waste Fly and Bottom Ash", Co-PI (2021)
2. US DOE EERE CRITICAL MATERIALS contact on "Recovery of Rare Earths from Bauxite Residue" – PI (2021)
3. US DOE REMADE program contract on "Selective Removal of Impurities from Molten Aluminum Scrap Melts", PI (2021)
4. US DOE REMADE program contract on "Recovery of Precious Metal from E-Waste", Co-PI (2020)
5. "Sorting of Aluminum bearing scrap using XRF" - DOE ARPA-E - working with UHV Technologies (2013-2019), led to the formation of VC funded spin-off company
6. "Production of Primary - Quality Mg and Aluminum-Magnesium Alloys from Secondary Aluminum Scrap" - DOE ARPA-E (2013-2015)
7. "Hg sensor for power plants flue gases" - DOE SBIR and KY match - working with UHV Technologies (2014)
8. "Recycling and Metal Flow Opportunities for U.S. Cu, Mg and Ti Industries" - US Dept of Energy (2013)
9. "Expert Analysis of Aluminum Production in Support of Industry Energy Futures Study" - US Dept. of Energy (2012)
10. "Advanced Scalable Clean Aluminum Melting Systems" - US Dept. of Energy (2007)
11. "Development of Continuous Casting of Aluminum Sheets for Automotive Markets "US Dept. of Energy (2006).
12. Improving Energy Efficiency in Aluminum Melting"- US Dept. of Energy (2006)
13. "Modeling Optimization of DC Casting to Reduce Aluminum Ingot Cracking" – US Dept. of Energy (2004)
14. "Reduction of Oxidative Aluminum Melt Loss" – US Dept. of Energy (2004)