

## Dr. Santokh S Badesha External CV

### **Business Address:**

Santokh S. Badesha, Ph.D, D.Sc (Hons.)  
 Distinguished Professor of ECE – COE  
**Elmore Family School of Electrical and Computer Engineering**  
 Corporate Fellow, Xerox Corp.



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### **Education**

Baring Union Christian College, India	Chemistry, Physics, Math	B.Sc., 1967
Punjab University, India	Chemistry	B.Sc., (Hons.), 1969
Punjab University, India	Organic Chemistry	M.Sc. (Hons.), 1970
Punjab Agricultural University, India	Organic Chemistry	Ph.D., 1973
University of East Anglia, UK	Organic Chemistry	Ph.D., 1976
University of Leicester, UK	Organic Chemistry	Postdoc, 1976

### **Employment**

- **Distinguished Professor, Purdue University COE- ECE, Nov 2022-Present**
- **Corporate Fellow and Manager Open Innovation, Xerox Corporation 2007 - present**
- **Research Fellow, Xerox Innovation Group 2004-2007**
- **Manager, Advanced Components Competency Lab, Xerox Innovation Group 1998-2004**
- **Principal Scientist & Area Manager, Xerox Webster Research Center 1990-1998**
- **Senior Research Scientist, Xerox Webster Research Center 1980-1990**
- **Teaching Fellow, Rensselaer Polytechnic Institute, Troy NY 1976-1980**

### **Other Professional Activities**

I have been invited to work with a wide range of external institutions and organizations spanning academia, industry, and State and Federal agencies to advance technological innovation, commercialization, economic growth and workforce development:

#### **State and Federal Agencies:**

- NY State Governor's Task Force on Economic Development followed by The Armonk Group for developing strategy and recommendations to NY State Governor for future investments.
- NSF's NANO2 initiative, developing research agenda (Nanotechnology 2020).
- Innovation eco-system at NY State Foundation for Science, Technology and Innovation.
- Industrial Research Institute's research proposals for NSF funding.
- Helped secure AMPrint Center funding from NYS-ESD-NYSTAR and industry partners.
- Serve on Board of Trustees of ESD-NYSTAR/FuzeHub representing NYS Industry

#### **Academic Institutions:**

- Xerox Technical and Executive Liaison with Clarkson U, Brown, Alfred, RPI, Penn State U, RIT, UOR, NCSU, UOI System, Purdue, SUNY-(UB, Binghamton, Stonybrook), and NCA&T, helping to bridge the gaps between university and industry research, to develop talent, to improve investment options, and to secure joint funding from federal and state agencies.
- Co-lead (with IBM) an academia/industry coalition for Services Science Education and Innovation in response to the America Competes Act
- Championed establishment of service science education as a discipline at NCSU.
- Championed data driven services science innovation at NCA&T, Clarkson U, and RIT.

- Championed establishment of a Centers of Excellence for Innovation Studies and Advancement (CISA) and NanoCollaborative at RIT, Cornell, NCA&T, and Clarkson.
- Helped design curriculums for Professional Master's Degree Program (PMP) and MicroMasters® at Purdue U.
- Serve as Advisory Board Chairman for Clarkson U/Center for Advanced Materials Processing; Served as Advisory Board Member for Clarkson University' Center for Advanced Materials Processing; RIT Saunders College of Business; Served on the Industrial Advisory Boards of NSF- I/U CRC at CUNY and Purdue U School of ECE; Industrial Fellow of NCSU/Center for Innovation Management Studies; Board Member of International Society of Service Innovation Professionals.

### **Professional Memberships**

Member, National Academy of Engineering; Honorary Fellow, Punjab Science Congress/Indian Academy of Sciences; Industrial Fellow, Center for Innovation Management Studies (CIMS) at NC State University; Fellow, Society for Imaging Science & Technology; Chartered Scientist, The Science Council, UK; Fellow, Royal Society of Chemistry, UK; Member, Materials Research Society; Member, American Chemical Society; Member, American Ceramics Society.

### **Intellectual Property, Scientific Publications and White Papers**

U. S. Patents Issued: 267 that have also been filed in multiple foreign countries. An additional over 50 U.S. Patents are pending and/or at different stages of patenting process at USPTO. Invention Disclosures: 446, 55 Publications, and 10 White papers.

## **Awards and Recognitions (External and Xerox Internal)**

### **External**

**2022: Fellowship, IET** (Institution of Engineering and Technology, UK)  
**2022: Mountbatten Medal**, Institution of Engineering and Technology (UK)  
**2022: Rishi Raj Medal for Innovation and Commercialization**, American Ceramics Society  
**2022: Power 50 Technology List**, Rochester Business Journal  
**2021: Fellow, National Academy of Inventors**  
**2021: Member**, National Academy of Engineering  
**2021: Honorary Member**, Society for Imaging Science & Technology  
**2020: Senior Consultant**, UC Berkley Haas School of Business  
**2019: Member**, Advisory Board College of Electrical & Computer Engr of Purdue U  
**2019: Member**, Advisory Board of ISSIP  
**2014: Board Director**, FuzeHub at NYS-ESD-NYSTAR  
**2013: Industrial Fellow**, CIMS at NCSU  
**2013: Honorary Fellow**, Punjab Science Congress/Indian Academy of Sciences  
**2011: Santokh Badesha Leadership Scholarship** Established by Clarkson U  
**2011: Fellow**, Society for Imaging Science & Technology  
**2011: Member**, Industrial Advisory Board of NSF- I/U CRC at CUNY  
**2010: Member**, Advisory Board of Saunders College of Business, RIT  
**2009: Chester F Carlson Lifetime Achievement Award** of Society for Imaging S & T.  
**2009: Chairman**, Advisory Board, Clarkson CAT-CAMP  
**2009: Represented Xerox at White House** to receive National Medal of Honor in S & T.  
**2007: Honorary Doctor of Science** from Clarkson University  
**2004: Chartered Scientist** of The Science Council, UK  
**1998: Board Member**, Clarkson University' Center for Advanced Materials Processing  
**1997: Distinguished Inventor of the Year Award**, Rochester Intellectual Property Law Association  
**1997: Proclamation** by the Mayor, Rochester, NY  
**1985: Fellow**, Royal Society of Chemistry, UK

### **Xerox Internal (Major)**

**2019: Induction to the Xerox CEO Club**

**2007: Most Prolific Inventor**, Xerox Corp.  
**2001: Inducted to the Hall of Fame** of Xerox Innovation Group  
**1999:** Chester F Carlson Eagle Award  
**1998:** Xerox Eagle Award  
**1997: Excellence in Management Award**  
**1996: The President's Award**  
**1996:** Special Recognition Award  
**1994:** Xerox Eagle Award  
**1993: Excellence in Science & Technology Award**  
**1992:** Xerox Eagle Award  
**1992: Outstanding Team Leadership and Management Award**  
**1992:** Team Excellence Award  
**1990:** Xerox Eagle Award  
**1989: Excellence in Science and Technology Award**  
**1989:** Achievement Award  
**1988:** Achievement Award  
**1988:** Achievement Award  
**1983: Excellence in Science and Technology Award**

### **External Publications / Presentations/ US Patents**

1. H. Singh and S.S. Badesha, Aminoketone-Carbinolamine Tautomerism-Ring Size Effect, Tett. Letts., 585, (1970).
2. H. Singh, S.S. Badesha and S.J. Lain, Reactions of Ethyl- $\alpha$ -Aminocrotonates and Isothiocyanates: A Limitation, Chem. Ind. (London), 729 (1971).
3. H. Singh and S.S. Badesha, Thiazino- and Thiazepino-Benzimidazoles-Ring Size Effect on Aminoketone-Carbinolamine Tautomerism, Ind. J. Chem., 9, 918 (1971).
4. H. Singh, S.S. Badesha and K.B. Lal, Aminoketone-Carbinolamine Tautomerism: Steric Effects, Chem. Ind. (London), 255 (1972).
5. H. Singh and S.S. Badesha, Synthesis of Heterocycles via Enamines (I) Formation of 1,4-Dihydropyrimidine-2-Thiols and 2-Amino-1,3-Thiazines in Reactions of Ethyl- $\alpha$ -Aminocrotonates with  $\alpha$ -Keto Isothiocyanates: Role of Solvents, Aust. J. Chem., 26, 2453-7 (1973).
6. H. Singh and S.S. Badesha, Aminoketone-Carbinolamine Tautomerism: Part III  $\alpha$  Ring Size Studies in Cycloalkanone Derivatives, Ind. J. Chem., 11, 311 (1973).
7. H. Singh, K.B. Lal and S.S. Badesha, Role of Aminoketone-Carbinolamine Tautomerism in Reaction of  $\alpha$ -Halo- and Thiocyanato Keytones with o-Carbethoxyanilinium Thiocyanates and Chlorides, Ind. J. Chem., 11, 750 (1973).
8. H. Singh and S.S. Badesha, Formation of 1-Morpholino- and 1-Piperidino-2-Thioamido-Cyclohexenes in the Reactions of 2-Isothiocyanato-2-Methylpentan-4-one with 1-Morpholino and 1-Piperidino Cyclohexenes with 2-Isothiocyanato-2-methylpentan-4-one, Aust. J. Chem., 28(1), 143 (1975).
9. H. Singh and S.S. Badesha, Synthesis of Heterocyclics via Enamines (II). Reactions of 1-Anilino, 1-Morpholino and 1-Piperidino Cyclohexenes with 2-Isothiocyanato-2-methylpentan-4-one, Aust. J. Chem., 28(1), 143 (1975).
10. H. Singh and S.S. Badesha, Cyclodehydrations of Aminoalcohols, Aminoketones and Aminoacid. Synthesis of Thiazepino-5-Thiazoicinobenzimidazoles, Ind. J. Chem., 13(4), 323 (1975).
11. R.A. Jones, S. Nokeo and S.S. Badesha, Phase-Transfer Catalysis: Acylation of  $\alpha$ -Dicarbonyl Compounds, Synthetic Communication, 7(3), 195 (1977).
12. H. Singh, S.S. Badesha and R.K. Malhotra, Synthesis of Heterocycles via Enamines (III). Reactions of Allylthiocyanate with Ethyl- $\alpha$ -aminocrotonate, Ind. J. Chem., 14(3), 215 (1976).

13. R.A. Jones and S.S. Badesha, Synthesis and Reduction of 2H-cyclohepta-[C]pyrrol-6-ones, *Heterocycles*, 4(5), 969 (1976).
14. H. Singh, S.S. Badesha and R.K. Mehta, Synthesis of N-(1,1-dimethyl-3-oxobutyl)2-Oxocycloalkane Carbothioamides, *Ind. J. Chem.*, 14(8), 615 (1976).
15. H. Singh, S.S. Badesha and A.S. Cheema, Intermediates in Hantzsch Synthesis and Synthesis of Symmetrical Thioethers, *J. Ind. Chem. Soc.*, 53(7), 682 (1976).
16. S.S. Badesha, M. Swindles, S. Trippett and R.E. Waddling, Further Synthesis of Quinquevalent Spirophosphoranes by Using N-chlorodiisopropylamine, *J. Chem. Soc. Perkin (i)*, No. 11, 1438 (1978).
17. J.P. Ferris, S.S. Badesha and T. Newton, Synthesis of Quinazoline Nucleosides from Ribose and Anthraniklonitrile. An Application of Phase-Transfer Catalysis in Nucleoside Synthesis, *J. Org. Chem.*, 44(2), 173 (1979).
18. R.A. Jones and S.S. Badesha, Phase-Transfer Catalysis: Phosphorylation of  $\alpha$ -dicarbonyl Compounds, *Synthetic Communications*, 11(7), 557 (1981).
19. J.P. Ferris, S.S. Badesha, W.Y. Ren, H.C. Huang and R.J. Sorcek, General Synthesis of Imidazole C-Nucleosides from Carbohydrate Adducts of Diaminomaleonitrile, *J. Chem. Soc., Chem. Comm.*, 110 (1981).
20. R.A. Jones, S.S. Badesha, D. Rustidge, K. Vellesamy and C. Oretir, The Structure of Potentially Tautomeric Pyrrolo(3,4-d) Pyridazines, *Acta Chim. Turc.*, 9(1), 225 (1981).
21. S.S. Badesha, P. Monczka and S.D. Smith, Chalcogenide Esters as Reactive Intermediates in Selenium and Tellurium Purifications, *Canadian J. Chem.*, 61(9), 2199 (1983).
22. S.S. Badesha, A Novel Chemical Process to Reclaim High Purity Chalcogens from Crude Source Materials, *Proceedings of 4th International Conference on the Organic Chemistry of Selenium and Tellurium*, (1983).
23. S.S. Badesha, A Novel Chemical Process for the Preparation of Se Te Alloys: Coreduction of Chalcogenide Esters, *Proceedings of 4th International Conference on the Organic Chemistry of Selenium and Tellurium*, (1983).
24. G.T. Fekete and S.S. Badesha, Special Applications of the XRD Technique, *Proceedings of Eastern Analytical Symposium*, (1984).
25. T.W. Smith, S.S. Badesha and S. Smith, Chemical Alloying, A Novel Method for the Preparation of Homogeneous SexTe<sub>1-x</sub> Alloys, *J. Am. Chem. Soc.*, 106, 7247 (1984).
26. R.O. Lolutfy and S.S. Badesha, Electrochemical Reduction of Chalcogenide Esters in Non-Aqueous Medium, *Electrochimica Acta*, 30, 101 (1985).
27. S.S. Badesha, S. Smith and L. Kowalczyk, "Chemical Method to Reclaim High Purity Chalcogens from Scrap Alloys", *Proceedings of 3rd International Symposium on Industrial Uses of Se and Te*, (1985).
28. S.S. Badesha and T.W. Smith, "Homogeneous Alloy Made Via a Chemical Reaction", *High-Tech Materials Alert* 2030, 5 (1985).
29. S.S. Badesha, T.W. Smith and S.D. Smith, Chemical Alloying, *Chem. Tech.*, 3, 132 (1985).
30. S.S. Badesha and T.W. Smith, "Creating Alloys by Chemical Reaction," *Science News*, 126(24), 376 (1985).
31. S.S. Badesha, T.W. Smith and S.D. Smith, "Se Te Alloys Made Via Chemical Reaction," *Chemical and Engineering News*, 62, 28 (1984).
32. S.S. Badesha and I. Tarnawskyj, "Chemical Alloying: Effect of Temperature on the Average Crystallite Size of SeTe Alloys, *Proceedings of 3rd International Symposium on Industrial Uses of Se and Te*," (1985).
33. S.S. Badesha, M. Abkowitz and F.E. Knier, "Chemical Process to Normalize the Electrical Properties of t-Se," *J. Material Research*, 1(1), 10 (1986).
34. M. Abkowitz, S. S. Badesha and F.E. Knier, Reversible Chemical Modification of the Electrical Behavior of  $\alpha$ -Se, *Solid State Communications*, 57(8), 579 (1986).
35. S.S. Badesha, G.T. Fekete and I. Tarnawskyj, "Effect of Reaction Temperature on the Average Crystallite Size of SexTe<sub>1-x</sub> Alloys", *J. Materials Research*, 1(2), 234 (1986).

36. S.S. Badesha, Chemical alloying: *"A novel method to prepare Chalcogenide alloys and their applications in electrophotography"*, Proceeding of Japan Hardcopy 88, 104 (1988).
37. S.S. Badesha, *"Novel Method to Prepare Stable Colloidal Dispersions of Chalcogenides"*, Proceeding of 4th International Symposium on the Industrial Uses of Se and Te, 219 (1989).
38. S. S. Badesha, *"Chemical Methodologies to Control Chalcogenide Alloys Fractionation"*, presented at the 5th International Symposium on the Industrial uses of uses of Se and Te, 1994.
39. F. J. Berry, A.A. Tyrrer, and S. S. Berry, *"Tellurium-125 Mossbauer Spectroscopy and X-ray Powder of Selenium-Tellurium Alloys Prepared by Novel Methods"*, Nuclear Instruments and Methods in Physics Research B76, 299 (1993).
40. S. S. Badesha, *"Chemical Methodologies to Prepare Network Materials"*, presented at the 25th Northeast Regional Meeting of ACS, 1995.
41. S. S. Badesha, A.W. Henry, and G. Heeks, *"Ceramers: Composites Containing Titania and Silica Networks"*, presented at the 25th Northeast Regional Meeting of ACS, October 22-25, 1995, Rochester, New York.
42. S. S. Badesha, *"Chemical Methodologies to Prepare Networks of Fluoropolymers and Polyorganosiloxanes"*, presented at the ACS, Division Of Polymer Chemistry, 1993, session entitled "Nanocomposites".
43. S. S. Badesha, *"Hybrid Networks Through Sol-Gel and Their Application in Electro photography"*, presented at the MRS Spring Meeting in San Diego, 1996.
44. S. Badesha and D. Gervasi, *"Tailoring Functional Properties of Fluoroelastomers: Novel Curing Systems"*; presented at a conference on Fluorine & Silicone in Coatings, held in December 6 – 7, 2005, Manchester, UK.
45. D. Gervasi and S. Badesha, *"Tailoring Functional Properties of Fluoroelastomers"* at CAMP Technical meeting, 2005.
46. Richard Partch, David Gervasi, Santokh Badesha and Matthew Kelly *"Thermal Conductivity of Nanoparticle-Filled Polymer Composites"*; presented at Symposium on Composite Materials at the Int'l Mexico-US MRS Meeting in Cancun, August 16 - 20. 2009.
47. S. Badesha; *"Open Innovation@ Xerox: Enablers and Barriers"*; Presented at CIRCA 08in Saratoga Springs, NY on May 19, 2009.
48. A. Nel, D. Grainger P. Alvarez, S. Badesha, V. Castranova, M. Ferrari, M. Goodwin, P. Grodzinski, J. Morris, N. savage, N. Scott, and M. Wiesner, *"Nanotechnology Environmental, Health, and Safety Issues"*, presented at Nanotechnology Long-Term Impacts and Research Directions: 2000-2020 in Washington, DC, September 30, 2010.
49. Fa-Gung Fan and Santokh Badesha, *"Modeling Atmospheric-Pressure Plasma and Plasma Chemistry"* at the Annual CAMP meeting held May 28, 2010.
50. M. Hersam, P. Weiss, R. Siegel, P. Jones, F. Ebrahimi, C. Murray, S. Glotzer, J. Ruud, J. Belk, S. Badesha, A. Baca, and D. Knox, *"Applications: High-Performance Materials and Emerging Areas"*, presented at Nanotechnology Long-Term Impacts and Research Directions": 2000-2020 in Washington, DC, September 30, 2010.
51. J. Broody, A. Rao, F. Naveda, and S. Badesha, *"University and Industry Collaboration for Services Innovation"*; presented at INFORMS Annual Meeting in Charlotte on Nov. 13-16<sup>th</sup>, 2011.
52. S. Badesha, *"Innovation at Xerox: Bridging Academia business research"*, presented at CEIS, University of Rochester Technology Showcase held at Double Tree, Rochester, NY on April 5, 2012.
53. S. Badesha, *"A value Added Materials Research Story: Novel Composites Improved Fusing Component Life in Printers"*, Intersections, Materials Research & Science Policy Fall 2012 issue

54. Y. Zuo and S. Badesha, "Preparation of Silica Aerogels with Improved Mechanical Properties and Extremely Low Thermal Conductivities through Modified Sol-Gel Process", to be presented at the NIP Society of Imaging Science and Technology held in Quebec City, Canada is September 9-13, 2012.
55. C. Cetinkaya, C. Vallabh, J. Stephens, G. Kmiecik-Lawrynowicz S. Badesha, and M. Sweeney, "Predicting Electrostatic Charge on Single Microparticle", Submitted to Powder Technology on May 8, 2015.
56. S. Badesha and J. Swift, "Practical Surfaces Beyond the Wheel", Surface Science 500 (2002) 1024-1041.
57. S. Badesha, "Foundational Role of Non-Oxide Glass to Enable Electrophotographic Printing and Creation of Xerox Corporation", published in American Ceramics Society' National Day of Glass pages 161-166 held in Washington, DC April5-7, 2022

### **White Papers:**

- 1) S. Badesha, "Bridging the gap between I-U research via Structured Workshops", a white paper submitted to NYS Gov' Task Force on Economic Development , September 15, 2009.
- 2) S. Badesha and J. Spohrer, "STEM Center of Excellence for Services Innovation in NYS", a white paper submitted to NYS Gov' Task Force on Economic Development , September 15, 2009.
- 3) S. Badesha, "A New Model for Bridging the Gap – Creating Industry-Academic Nano-Innovations" a white paper submitted to NYS Gov' Task Force on Economic Development September 15, 2009.
- 4) S. Badesha, "NYS-innovation Foundation", a white paper submitted to NYS Gov' Task Force on Economic Development , September 15, 2009..
- 5) H. Lin, S. Badesha, W. Wang, J. Yang, and S. Lambert, "Coating and Adhesive Designs", a white paper submitted to IRI-NSF, February 28, 2010.
- 6) S. Badesha, "NanoCollaborative: "Needs driven Capability Building" a white paper submitted to IRI-NSF, February 28, 2010.

### **Sessions Organized and Chaired**

1. 3th International Symposium on the Industrial Uses of Se and Te Session entitled "Photoelectronic Properties Of Se and Te" organized and chaired. (1983)
2. 4th International Symposium on the Industrial uses of uses of Se and Te Session entitled "Photoelectronic Properties of Chalcogens" Chaired. (1989)
3. ACS, Division of Polymer Chemistry, session entitled "Nanocomposites", Chaired. (1993)
4. ACS, Division Of Polymer Chemistry, session entitled "Nanocomposites", Chaired (1994)
5. S. Badesha, as a co-PI with Professors G. Ahmadi, S.V. Babu, T. Sugrue, and T. Young of Clarkson U, authored & submitted a research proposal entitled "Partnership for Innovation in Materials, Environment and Energy Technologies (PI-MEET)" for NSF funding, in April 2005. We were not successful this time but will resubmit the proposal in May, 2006 to NSF.
6. S. Badesha, authored as a co-PI with Professors R. Partch and S. Minko (Clarkson U), O. Nalamasu, A. Tran, and J. Moore (RPI), two research proposals entitled "Fabrication of nanostructure electrodes for energy efficient cold electron emission charger" and "Composite Filler Particles having Optimized Heat Transfer for use in Copying Machine Diffuser Rollers" for NYSERDA funding. Both proposals were funded each at a \$160K/per year level for two years

### **US PATENTS (issued)**

1. "Process for Preparation of Chalcogenide Alloys", **U.S. Patent 4,576,634.**
2. "Process ofr Preparation of Chalcogens and Chalcogenide Alloys of Controlled Average Crystallite Size", **U.S. Patent 4,557,922.**
3. "Process for Purification of Selenium", **U.S. Patent 4,548,800.**
4. "Photoconductive Imaging Members with Chemically Modified Photoconductive Layers", **U.S. Patent 4,613,557.**
5. "Process for Reclamation of High Purity Selenium from Scrap Alloys", **U.S. Patent 4,530,718.**

6. *"Process for Modifying the Electrical Properties of Selenium and Selenium Alloys"*, **U.S. Patent 4,520,010.**
7. *"Process for Preparation of High Purity Tellurium"*, **U.S. Patent 4,389,389.**
8. *"Process for Reclamation of High Purity Selenium, Tellurium and Arsenic from Scrap Alloys"*, **U.S. Patent 4,411,698.**
9. *"Preparation of Chalcogenide Alloys by Electrochemical Coreduction of Esters"*, U.S. Patent **4,432,841.**
10. *"Coreduction Process for Incorporation of Halogens into Chalcogen and Chalcogenide Alloys"*, **U.S. Patent 4,624,701.**
11. *"Process to Prepare Stable Colloidal Dispersions of SeTe Alloys"*, **U.S. Patent 4,645,619.**
12. *"Process for Preparation of Chalcogenide Alloys by Solution Coreduction of a Mixture of Oxides"*, **U.S. Patent 4,484,945.**
13. *"Process for Preparing Alloys of Elements of Groups VA and VIA"*, **U.S. Patent 4,460,408.**
14. *"Stabilized Polysilylenes and Imaging Members Thereof"*, **U.S. Patent 4,758,488.**
15. *"Photoresponsive Imaging Members with Oxygenated Polysilylenes"*, **U.S. Patent 4,774,159.**
16. *"Photoresponsive Imaging members with High Molecular Wt. Polysilylene"*, **U.S. Patent 4,772,525.**
17. *"Coated Ink Jet Printhead"*, **U.S. Patent 5,212,496.** (May 18, 1993)
18. *"Process for the Preparation of Chalcogenide Alloys by the Solution Cooxidation of Alkaline Selenium and Alkaline Tellurium Compounds"*, **U.S. Patent 4,863,508.**
19. *"Photoresponsive Imaging Members with Polygermanes"*, **U.S. Patent 4,822,703.**
20. *"Reduction of Selenium Alloy Fractionation"*, **U.S. Patent 4,822,712.**
21. *"Vacuum Deposition of Selenium Alloys"*, **U. S. Patent 4,842,973.**
22. *"Process for the Preparation of Polysilylenes"*, **U.S. Patent 4,839,451.**
23. *"Process of Restoring Hydrogenated and Halogenated am-Si Imaging Members"*, **U.S. Patent 4,849,315.**
24. *Slade, Imaging Members with Photogenerating Compositions Obtained by Solution Process"*, **U.S. patent 4,855,203.**
25. *"Photoconductive Imaging Members with Electron Transporting Polysilylenes"*, **U. S. Patent 4,885,201.**
26. *"Process for Controlling the Fractionation of Chalcogenide Alloys"*, **U.S. Patent 4,894,307.** (1/16/90)
27. *"Process for Preparing Chalcogenide Alloys"*, **U.S. Patent, 5,035,857.** ( July 30,1991 )
28. *"Process for Suppressing the Fractionation of Chalcogenide Alloys"*, **U.S. Patent, 4,904,559.** (2/27/1990)
29. *"Processes for Suppressing the Fractionation of Chalcogenide Alloys"*, U.S. Patent, 5,030,477, 7/ 9/91
30. *"Photoresponsive Imaging Members With Hole Transporting Polysilylene Ceramers"*, **U.S. Patent 4,917,980.** (April 17,1990)
31. *"High Purity Se, Te, and As Preparation by Electrochemical Reduction of Their Ester Compounds"*, **U.S. Patent 4,448,646** ( August 6, 1990 )
32. *"Photoconductive Imaging Members with Polyphosphazene Binders"*, **U.S. Patent 5,004,663, 4/2/91.**
33. *"Process for Preparing Chalcogenide Alloys"*, **U.S. Patent 5,002,734** ( March 26, 1991 ).
34. *"Functional Hybrid Thin-Films by Sol-Gel"* **U.S. Patent 5,116,703.** (May 26, 1992)
35. *"Photoconductive Imaging Members with Polyphosphazenes"*, **U.S. Patent 5,008,169.** (April 16,1991)
36. *"Conductive Polymer Composites Electrophotographic Seamless Substrates based on Electrostatic and Electrochemical Deposition"*, **U.S. Patent 5,079,121.** (January 7,1992)
37. *"Process for Restoring Amorphous Silicon Imaging Members"*, **U.S. Patent 5,030,536.** ( July 9, 1991 )
38. *"Process for Controlling Alloy Fractionation"*, **U.S. Patent 5,075,191**(10/24/91)
39. *"Material Package for Fabrication of Fusing Components"*; U.S. **Patent 5,166,031**, 11/24/1992 )
40. *"Fuser Member"*, **U.S. Patent 5,141,788.** (August 25,1992)
41. *"Photoconductive Imaging Members Comprising A Polysilylene Donor Polymer And An Electron Transfer Acceptor"* **U.S. Patent 5,166,016.** ( November 24,1992 )
42. *" Coated Ink Jet Printhead"*, **U. S. Patent 5,212,496;** ( Issued May 18, 1993).
43. *Photoconductive Imaging Members With Polyhydroxy Ether Binders"*, **U.S. Patent 5,215,844** (6/1/93)

44. *Method of Making a Fuser Member Having a Polyorganosiloxane Grafted Onto a Fluoroelastomer and Method of Fusing*, **U.S. Patent 5,281,506**. (January 25, 1994)
45. *“High Sensitivity Visible and Infrared Photoreceptor”*, **U.S. Patent 5,310,613**. (May 10, 1994)
46. *“Intermediate Transfer Component Coatings of Ceramer and Grafted Ceramer”*, **U.S. Patent 5,337,129**. (August 9, 1994)
47. *“Intermediate Transfer Element Coatings”*, **U.S. Patent 5,340,679**. (August 23, 1994)
48. *“Electrographic Imaging Members and Method of Making”*, **U.S. Patent 5,338,587** (8/16/94)
49. *“Sol-Gel for the Preparation of Volume Graft”*, **U.S. Patent 5,366,772** (11/22/1994)
50. *“Fuser member Overcoated With a Fluoroelastomer, Polyorganosiloxane And Copper Oxide Composition”*, **U S Patent 5,370,931** (12/6/94)
51. *“Coated Fuser Members”*, **U.S. Patent 5,401,570** (March 28, 1995)
52. *“Intermediate Transfer Component Coatings Of Titamers and Grafted Titamers”*, **U S Patent 5,486,987**; D/93423, (Issued on 10/10/95)
53. *“Apparatus And method for Improved Liquid Developer Image Conditioning”*, **U S Patent 5,493,369** ; D/94354 Issed 2/20/96
54. *“Coated Fuser Member process”*, **U. S. Patent 5, 501,881**; D/94605, IP#932151 (issued 3/26/96)
55. *“Roller for Controlling Application of Carrier Fluid”*, **US Patent 5,481,341**; D/93104( Issued Jan 2,96)
56. *“Fusing Components Containing Grafted Titamer Compositions”*, **US Patent 5, 500,299** ; D/93086Q, IP#930365 (issued on March 19, 1996)
57. *“Fusing Components Containing Titamer Compositions”*, **US Patent 5, 500,298**; D/93086, ( issued on March 19, 1996)
58. *“Fusing System With Monoamino Functional Silicone Release Agent”* **U. S. Patent 5,531,813**; D/93569I11, issued 7/2/96.
59. *“Method for Transferring a Toner Image”*, **U S Patent, 5,567,565**; D/93256, issued on10/22/96
60. *“Liquid Developer Compatible Intermediate Toner Transfer member”*, **U S Patent 5,537,194** ; D/94152, Issued on 7/16/96.
61. *“Low Surface Energy Material”*, **U S Patent 5.480,938**; D/93151, issued 1/2/96.
62. *“Intermediate Transfer Components Having Multiple Coatings”*, **U S Patent 5,576,818**; D/94848, Issued 11/19/96.
63. *“Method Of Fabricating A Microporous Surface Blotter Roll”*, **U S Patent 5,571,463**; D/94292, issued 11/5/96.
64. *“Radiation Induced Grafting Of Polyorganosiloxanes To Fluoroelastomers”*, **U S Patent 5,587,208**; D/92465, issued 12/24/96.
65. *“Printing Apparatus Including An Intermediate Toner Member Having A Top Layer Of A Fluoroelastomer Polymerized From An Olefin And A Fluorinated Monomer”*, **U S Patent 5,585.905**. D/94151, Issued 12/17/96.
66. *“Elastomeric Articles Containing Haloceramer Compositions”*, **U. S. Patent 5,668,203** ; D/94155, Issed 9/16/97.
67. *“Fluoroelastomer Member”*, **U.S.Patent, 5, 695, 878**; D/94356Q, Issued 12/9/97.
68. *“Fluoroelastomer Member”*, **U.S. Patent 5,700,568**; D/94356, issued 12/23/97.
69. *“Fusing Components Containing Ceramer Compositions”*, **U.S. Patent 5,686,189** D/92067 issued 11/11/97
70. *“Transfuser”* **U.S. Patent 5,708,950**; D/94506, issued Jan.13,1998.
71. *“Dielectric Image Receiving Member”*, **U. S. Patent 5,714,243**; D/89422, issued 2/3/98.
72. *“Thin, Thermally Conductive Fluoroelastomer Coated Fuser Member”*, **U. S. Patent 5,729,813**; **D/95001i**, Issued on March 17,1998.
73. *“Crosslinked Latex Polymer Surfaces And Methods thereof”*, **U. S. Patent 5,736,250**; D/96120, issued 4/7/98.
74. *“Coating Compositions With Stable Viscosity”*,**U. S. Patent 5,741, 841**; **D/95592**, issued April 21, 1998.
75. *“Volume Grafted Elastomer Surfaces and Methods Thereof”*, **U. S. Patent 5,744,200**; D/94320, Issued 4/28/98.



76. " *Liquid Toner Image Conditioning Roll Having Image Protecting Surface Layer*", **U.S. Patent 5,745,826**; D/96444, issued on 4/28/98.
77. " *Fusing System With Amino Functional Groups In Siloxane Release Agent For Use with Toners And Fusing Members Reactive With Amine Groups*" **U. S. Patent 5,747,212**; D/9356911; issued (5/5/98)
78. " *Fluoroelastomer Surfaces And Methods Thereof* ", **U.S. Patent 5,750, 204**; D/94319 ; issued 5/12/98.
79. " *Fluoroelastomer Surfaces And Methods Thereof*" **U. S. Patent 5,753, 307**; D/94318 Issued 5/19/98
80. " *Coated Development Electrodes And Methods Thereof*", **U.S. Patent 5,761,587**; D/96244, issued 6/2/98.
81. " *Composite Coated Development Electrodes And Methods Thereof* ", **U. S. Patent 5,778,290**; D/96244Q3, Issued 7/7/98.
82. " *Organic Coated Development Electrodes And Methods Thereof*", **U.S. Patent 5,787,329**; D/96244Q1, issued 7/28/98.
83. " *Inorganic Coated Development Electrodes And Methods Thereof*", **U.S. Patent 5,805,964**; D/96244Q2 issued 9/8/98.
84. " *Method to Reverse Gelling of Fluorohydrocarbon Polymers and Volume Graft, A "Green Process"*, **U.S.Patent 5,830,939**; D/95593, Issued 11/3/98.
85. " *Polymer Nanocomposites*", **U S Patent 5,840,796; D/96544**, Issued on 11/24/1998.
86. " *Thermally Stable Fuser Member*", **U. S. Patent 5,846,643**; D/95145, issued on December 8,1998.
87. " *Coated Development Electrodes And Methods Thereof*", **U.S. Patent 5,848,327**; D/96244Q4, **issued on 12/8/98.**
88. " *Thermally Stablized Silicone Liquid and a Fusing System Using the Thermally Stablized Silicone Liquid*" **U S Patent 5,864,740**; issued on January 26, 1999.
89. " *Heated Fuser Member with Elastomer and Anisotropic Filler Coating*", **U.S. Patent 6,002,910**; D/98071, 12/14/99.
90. " *Method for Increasing Thermal Conductivity of Fuser Member Having Elastomer and Anisotropic Filler Coating*", **U.S. Patent 6,007,657**; D/98071Q, Issued 12/28/99
91. " *Printing Machine With A Heated Imaging Member*", **U.S. Patent 6,014,155**; D/96151, issued January 11, 2000.
92. " *Compatibilized Blend of Fluoroelastomer And Polysiloxane Useful For Printing Machine Components*", **U. S. Patent 6,035,780**; D/97205 . Issued March 14,2000.
93. " *Stablized Fluorosilicones Fuser Members*", **U. S. Patent 6,037,092**; D/ 99385Q. Issued March 14,2000
94. " *Thermally Stalbe Silicone Fluids*", **U. S. Patent 6,045,961**; D/98515, issued on 4/4/00.
95. " *Fluorinated Carbon Filled Latex Fluorocarbon Elastomers*", **U S Patent 6,103,815**; D/97081, issued on August 15,2000
96. " *Fuser Member With Fluoropolymer Silicone And Alumina Composite Layers*", **U.S. Patent 6,159,588**, D/97173, Issued 12/12/00.
97. " *Fuser Member Coated With Hydride Release Oil, Methods and Imaging Appartusus Thereof*" **U. S. Patent 6,253,055**; D/96116, Issued on June 26,2001.
98. " *Tertiary Amine Functionalized Fuser Fluids*", **U. S. Patent, 6,261,688**; D/96691, issued July 17,2001.
99. " *Method To Renew A Spent Fuser Member* ", **U. S. Patent, 6,289,587**; D/96152, Issued on 9/18/01.
100. " *Stablized Fluorosilicone Materials*", **U S Patent, 6, 297, 302**; D/99385, Issued on 10/2/01.
101. " *Stablized Fluorosilicone Transfer Member*", **U.S.Patent, 6,336,026**; D/99385Q1; issued on 1/1/02
102. " *Imageable Seam Intermediate Transfer Belt Having Toner Perticle-Sized Kerf Gap* ", **U.S. Patent, 6,353,725**; D/99613Q1, Issued 3/5/2002.
103. " *Edge Reinforced Seamed Belts* ", **US. Patent 6,353,724**; D/ A0803, issued March 5,2002
104. " *Seamed Belts Having Filled Backside Notches* ", **U.S. Patent 6,381, 436**, D/ 99613Q2, Issued 4/30/02.
105. " *Process for Seaming Interlocking Seams of Polyimide Component Using Polyimide Adhesives*", **U.S. Patent 6,379,486**; D/99598, Issued April 30, 2002
106. " *Transfix Components Having Outer Layer of Haloelastomer with Pendent Hydrocarbon Groups* ", **U S Patent 6,411,793**; D/A0592Q2, issued on 6/25/02.

107. "Transfix Components Having Fluorosilicones Outer Layer", **U. S. Patent, 6,434,355; D/A0592Q1**; issued on August 13, 2002.
108. "Laser Micro-Machining of Seamed Belts ", **U. S. Patent 6,437,282; D/ 99613Q3**, (issued on 8/20/02)
109. " Belts Having Overlapping End Sections ", **U. S. Patent 6,436,502; D/ 99613**, (issued on 8/20/02)
110. " Puzzle-cut on Puzzle-cut Seamed Belts ",**U. S. Patent 6,440,515; D/ A0804**, Issued on 8/27/2002
111. "Interpenetrating Polymer Network of Polytetra fluoroethylene and Silicone Elastomer for Use in Electrophotographic Fusing Applications", **U. S Patent 6,447,918; D/A0798**; Issued 9/ 10/2002.
112. "Coating Compositions for Development Electrodes", **U. S. Patent 6,456,812**, D/A0591; issued 9/24/02
113. " Transfix Components With layer having Polymer Matrix with Small Molecules and Image Forming Apparatuses with Same", **U. S. Patent, 6,482,504; D/A0794Q**; Issued November 19, 2002.
114. "Functional Fusing Agent" **U. S. Patent, 6,485,835; D/96694**,. Issued on November 26, 2002.
115. "Polyaniline And Carbon Black Filled Polyimide Intermediate transfer",**U. S. Patent, 6,489,020; D/A0586**, Issued on 12/3/2002
116. "Method of Making Imageable Seamed Intermediate Transfer Belts Having Burnished Beams" **U. S. Patent, 6,488,798; D/A99614**, Issued on December 3,2002
117. "Layer Having Polymer Matrix And Small Molecules", **U. S. Patent 6,558,778; D/A0794**; Issued on May 6, 2003.
118. "Tertiary Amine Functionalized Fuser Fluids", **U. S. Patent, 5,566,027; D/96691D**, Issued 5/20/2003.
119. " Transfix Component Having Haloelastomer Outer Layer", **U. S. Patent, 6,625,416; D/A0592**; Issued on September 23, 2003
120. "Phase Change Ink Imaging Component With Polymer Blend Layer." **U . S. Patent, 6,648,467, D/A1022Q7** issued Nov 18,2003
121. " Method for Making Belts Having Burnished Seam ", **U. S. Patent 6,669,800; D/99614**, Issued December 30, 2003.
122. "Epoxy Silane Cured Fluoroelastomer To Provide a More Chemical Insensitive Elastomer Matrix", **U S Patent 6,678,495; D/99240**; issued January 13,2004.
123. "Crosslinking of Fluoropolymers with Polyfunctional Siloxanes for Release Enhancement ", **U S Patent 6,680,095, D/ A0806**, Issued January 20, 2004.
124. "Fully Fluorinated Polymer Coated Development Electrodes;" **U S Patent 6,718,152; D/A1390Q**; Issued on April 7, 2004.
125. "Fuser Member Coating Composition and Processes For Providing Elastomer Surfaces Thereon", **U.S. Patent 6,716,502; D/97380**, Issued on April 7, 2004.
126. "Pressure Belt Having Polyimide Outer Layer", **U.S. Patent 6,733,943; D/A1411I**, Issued May 11, 2004
127. "Fuser Member Coating Composition and Process for Providing Elastomeric Surfaces Thereof" **U.S. Patent 6,733,839**; Issued on May 11, 2004.
128. " Seamed Belts Having Beveled End Sections", **U.S. Patent 6,736,745; D/ 99613Q**, Issued 5/18/2004
129. "Functional Fusing Agent" **U. S. Patent, 6,743,561; D/96694Q**,. Issued on June 1, 2004.
130. "Process For Solublizing Organometallic Compounds in Fluorinated Solvents by Addition of a Fluorinated Non- Catalytic Co-Stablizer" **U.S.Patent 6,747,089; D/A1390Q1**; Issued June 8, 2004
131. "Coatings Having Fully Fluorinated Co Stablizer, Metal Material And Fluorinated Solvent" **U.S. Patent 6,767,942; D/ A1390Q2**; issued on 7/27/04
132. "Blended Fluorosilicone Release Agent For Polymeric Fuser Members ", **U.S. Patent 6,808,814; D/A1530Q**, issued on 10/26/04.
133. "Blended Fluorosilicone Release Agent For Silicone Fuser Members ", **U.S. Patent 6,808,815; D/A1530**, issued on 10/26/04.
134. " Fluorosilicone release agent for fluoroelastomer fuser members", **U.S.Patent 6,830,819; D/A1530QQ**, Issued on 12/14/2004.
135. " Fuser Member Having Platinum Catalyzed Addition Cured Silicone Layer " **U.S. Patent; 6,838,140; D/95444** , issued on Jan 04, 2005.
136. "Phase Change Ink Imaging Component with Mica-Type Silicate Layer" **U.S. Patent; 6,843,559; D/A1022Q5**, Issues on January 18, 2005

137. "Transfix Components With Layer Having Polymeric Matrix With Small Molecules And Image Forming Apparatus With Same", **U.S. Patent 6,875,498**; D/A0794Q; Issued April 5, 2005
138. "Process for Curing Marking Components With Nano-Size Zinc Oxide Fillers"; **U.S. Patent 6,902,269**; D/A1652; Issued June 7, 2005.
139. "Phase Change Ink Imaging Component with Outer Layer Having Haloelastomer with Pendant Chains;" **U.S. Patent; 6, 910, 765**; D/A1022Q; issued on June 28, 2005.
140. "Phase Change Ink Imaging Component with Latex Fluoroelastomer Layer;" **U.S. Patent 6, 918, 664**; D/A1022Q4; Filed on June 19, 2005.
141. "Solid Ink Complaint Imaging Drum With Nano-elastomers" **U.S. Patent; 6, 923, 533**; D/A2261; issued on July 2, 2005.
142. "Fuser Member Having Fluorocarbon Outer Layer", **U.S. Patent 6,927,006**; D/A1411I, Issued 8/9/2005
143. "Phase Change Ink Imaging Component with Q-resin Layer." **U.S. Patent 6,932,470**; D/A1022Q6, issued on August 23, 2005.
144. "Phase Change Ink Imaging Component with Polymer Hybrid Coating" **U.S. Patent 6,939,000**; D/A1022Q8; Issued on September 6, 2005.
145. " Fuser Member Coating Composition and Processes For Providing Elastomeric Surfaces There on", **U.S. Patent 6,951,667**; D/Issued October 4,2005.
146. " Partially Fluorinated Polymer Coated Development Electrodes', **U.S. Patent 7,006,780**; **D/A3233**; issued on Feb 28, 2006.
147. "Method And Materials For Extending Fuser Member Life"; **U. S. Patent 7,105,063**; **D/ 20050315** ; issued on September 12, 2006.
148. "Processes for Solublizing Organ metallic Compounds In Fluorinated Solvents by Addition of a Partially Fluorinated Non-Catalytic Co-Stabilizer", **U.S. Patent 7,109,365**; D/A3233Q, issued Sept 19, 2006.
149. "T-Type Amino-Functional Release Agent for Fuser Members." **U.S. Patent 7,186,462**; D/200331754Q2, issued on March 6, 2007.
150. "Amino-Functional Copolymer Release Agent for Fuser Members;" **U.S. Patent 7,198,875**; **D/200331754Q1**, issued on April 3, 2007.
151. "Amino Functional Fusing Agent", **U.S. Patent 7,208,259**; D/A3305Q, issued on April 24, 2007.
152. "Blended Amino Functional Siloxane Release Agents For Fuser Members", **U.S. Patent 7,208,258**; D/200331754, issued on April 24, 2007.
153. "Blended Amino Functional Siloxane Release Agents For Fuser Members", **U.S. Patent 7,214,462**; D/200331754Q, Issued on May 8, 2007.
154. "Phase Change Ink Imaging Component Having Elastomer Outer Layer;" **U.S. Patent 7,222,954**; D/A1022; issued on May 29, 2007
155. "Phase Change Ink Imaging Component with Fluorosilicone Layer;" **U.S. Patent 7,234,806**; D/A1022Q3; Issued on June 26, 2007.
156. "Fuser fluid compositions"; **U.S. Patent 7,291,399**; issued November 6, 2007.
157. "Phase change ink transfix pressure component with dual-layer configuration", **U.S. Patent 7,322,689**; D/20041404; issued on January 29,2008.
158. "Phase Change Ink Transfix Pressure Component With Three-Layer Configuration", **U.S. Patent 7,325,917**; D/20041404Q1; Issued on February 5. 2008.
159. "Phase Change Ink Imaging Component with Thermoset Layer;" **U.S. Patent 7,401,912**; D/A1022Q2; Issued on July 22, 2008.
160. "Phase Change Ink Transfix Pressure Component with Single Layer Configuration", **U.S. Patent 7,407,278**; D/20041404Q; issued on August 5,2008.
161. "Perfluorinated Polyether as Release Fluids for Fuser Members", **U.S. Patent 7,491,435**; D/20051761, issued on 2/17/2009.
162. "System And Method For Material Authentication"; **U.S. Patent 7,495,214**; D/20061545-359244; issued on February 24, 2009.
163. "Electrophotographic Marking Systems with Release Agents" **U.S. Patent 7,509,084**; D/20060003, issued on March 24, 2009.

164. "Phase Change Ink Imaging Component Having Elastomer Outer Layer;" **U.S. Patent 7,553,010**; D/A1022; issued on June 30, 2009.
165. "Phase Change Ink Marking Systems with Release Agents", **U.S. Patent 7,556,368**; D /20060003Q, Issued on July 7, 2009.
166. "Fuser Member Having Conductive Fluorocarbon Outer Layer", **U.S. Patent 7,608,325**; D/20060553; Issued on October 27, 2009.
167. "System And Method For Material Authenticating an Electrostatic Material In An Image Forming Apparatus"; **U.S. Patent 7,706,700**; D/20061546-359755; Issued on April 27, 2010.
168. System and method for authenticating a fuser lubricant in an image forming apparatus", **U.S. Patent 7,715,733**; D/20061489-359754; Issued on May 11, 2010
169. "Phase Change Ink Imaging Component Having Conductive Coatings", **U.S. Patent 7, 810, 922**; D/20071442Q ; Issued October 12, 2010.
170. "Pressure Roller Two-Layer Coating For Phase-Change Ink-Jet Printer for Direct-on Paper Printing" **U.S. Patent 7,845,783**; D/20071442Q2; issued on December 7, 2010.
171. "Media Path Universal Cleaning Fluid Composition"; U.S. **Patent 7,846,265**; ID/20090716; 10/7/2010
172. "Electrically conductive pressure roll surfaces for phase-change ink-jet printer for direct on paper printing"; **U.S. Patent 7,874,664**; D/20071442Q1; issued on January 25, 2011.
173. "Phase Change Ink Imaging Component Having Two-Layer Configuration", **U.S. Patent 7,896,488**; D/20071442Q1, Issued March 1, 2011.
174. "Media Path Universal Cleaning Fluid Composition"; U.S. **Patent 7,901,515**; ID/20090716; Issued 3/8/11
175. "Inline Coatings Process for Xerographically Prepared MICR Checks"; **U S Patent 7,954,714**; D/20051890, issued on June 7, 2011.
176. " Iso-thermalizing Graphite Printer Structure And Method For Using Same", **U S Patent 8,041,279**; D/20080029 and 30 ; Issued on October 18, 2011.
177. "Perfluorinated Polyether for Phase Change Ink Members", **U S Patent 8,082,842**; D/20051761Q, Issued on 12/27/2011.
178. "Pressure and Transfix Rollers for a Solid Ink Jet Printing Apparatus" , **U.S. Patent 8,118,421**; D/ 20061476-US-CIP , Issued on February 21, 2012.
179. "Fuser Material Composition Comprising of a Polymer Matrix with the Addition of Graphene-Containing Particles", **U.S. Patent 8, 173, 337**; D/ 20081024, Issued May 8, 2012.
180. "Phase Change Inks Containing Graphene Based Carbon Allotropes Colorants"; **U.S. Patent 8, 177, 897**; D/20080298-US-NP; Issued on May 15, 2012.
181. "Hyper Nanocomposites (HNC) for Fuser Materials", **U.S. Patent 8,260,184**; ID#20090935-US-NP; Issued on September 4, 2012.
182. "Polyhedral Oligomeric Silsesquioxane Image Conditioning Coating"; **U.S. Patent 8,268,399**; ID#2009038; Issued on September 18, 2012.
183. "Multi-Stage Fixing Systems, Printing Apparatuses And Methods of Fixing Materials to Substrates", **US Patent 8,280,287**; D/20091626-US-NP, issued on October 2, 2012.
184. "Fuser Member Release Layer Having Nano-Size Copper Metal Particles"; **U S Patent 8,318,302**; ID#20071049; Issued on November 27, 2012.
185. "Coating Compositions for Fuser and methods of use thereof", **U S Patent 8,367,175**; D/20071050; Issued on February 5, 2013.
186. "Pressure and transfix rollers for a solid ink jet printing apparatus"; **US Patent 8,491,115**; issued on July 23, 2013.
187. "Substrate, System, and Method for Magnetic Ink Character Recognition Encoding", **US Patent 8,557,368**; D/20060617; issued on October 15, 2013.
188. " Methods for in situ applications of low surface energy materials to printer components"; **US Patent 8,672,444**; D/20120534-US-NP; Issued on March 18, 2014.
189. "Passivated Aluminum Nitride For Enhanced Thermal Conductivity Materials For Fuser Belts"; **US Patent 8,679,624** ; D/20081917 (20081918 & 20081919); Issued on March 25, 2014.
190. "Printhead And Method of Making The Printhead"; **U.S Patent 8,752,939**; D/20111650–US-NP, Issued on June 17, 2014.

191. "Methods for radiation curable gel ink leveling and direct-to-substrate digital radiation curable gel ink printing, apparatus and systems having pressure member with hydrophobic surface", **U.S. Patent 8,764,179**; D/ 20101719-US-NP; issued on July 1, 2014.
192. "MUTIL-FILM ADHESIVE DESIGN FOR INTERFACIAL BONDING PRINthead STRUCTURES"; **U.S. Patent 8,794,743**; D/20110634-US-NP, Issued on August 5, 2014.
193. "Thermally Stable Oleophobic Anti-wetting Coating for Inkjet Printhead Face"; **US Patent 8,841,401**; D/20120533-US-NP ; issued on September 23, 2014
194. "Passivated Aluminum Nitride For Enhanced Thermal Conductivity Composite Materials For Fuser Belts", **U.S. Patent 8,906,499**; D/ 20081917-US02 . issued on December 9, 2014.
195. "Methods and systems for ink-based digital printing with multi-component, multi-functional fountain solution", **U.S. Patent 8,919,252**; ID#**20111037-US-NP**; Issued on December 30, 2014.
196. "Anti-wetting coating composition"; US Patent **8,931,885**; D/20121444-US-NP , issued 1/13/2015.
197. "Oxygen Plasma to Improve Wetting of Aqueous Latex Inks on Low Surface Energy Elastomeric Surfaces"; **US Patent 8,985,758**; D/20120910-US-NP; Issued on March 24, 2015
198. "Inkjet Printheads Containing Epoxy Adhesives And Methods For Fabrication Thereof"; **U.S. Patent 9,004,648**; D/20121480-US-NP, issued on April 14, 2015.
199. "Method For Forming Functionalized Carbon Black With Amino-Terminated Polydimethylsiloxanes for Printing"; **U.S. Patent 9,011,594**; D/ **20121576-US-NP**; Issued on April 21, 2015
200. "Transfer Assist Blade"; **U.S. Patent 9,042,796**; D/ 20130391-US-NP; Issued on May 26, 2015.
201. "Systems and Methods for Forming and Implementing Book Binding Geometries as a Function of Stack Thickness"; **U.S. Patent 9,044,989**; D/20121307-US-NP, issued on June 2, 2015.
202. "Process for Bonding Interstitial Epoxy Adhesive for Fabrication of Printhead Structures in High Density Printheads"; **U.S. Patent 9,050,807**; D/20121100-US-NP, issued on June 9, 2015.
203. "Fuser Member"; **U.S. Patent 9,056,958**; D/20120147-US-NP, issued on June 16, 2015.
204. "Functional Surfaces Comprised of Hyper Nanocomposite (HNC) for Marking Subsystem Applications", **U.S. Patent 9,080,078**; D/20090935-US-NP, issued on July 14, 2015.
205. "Release Agent Composition For Solid Inkjet Imaging Systems For Improved Wettability"; **U S Patent 9,108,427**; D/20121706-US-NP, Issued on August 18, 2015.
206. "Release agent composition for solid inkjet imaging systems for improved coefficient of friction"; **U.S. Patent 9,127,230**; D/20120617-US-NP; Issued on September 8, 2015.
207. "Fluoroelastomers For Marking System Components, Including Grafted Fluorinated Polymers", **U S Patent 9,187,587**; D/20120879-US-NP , issued on November 17, 2015.
208. "Aqueous Ink Jet Blanket", **U S Patent 9,193,149**, D/20130212-US-NP, issued November 24, 2015.
209. "Infrared Reflective Pigments In a Transfix Blanket In a Printer", **U S Patent 9,193,209**, D/20131593-US-NP, issued on November 24, 2015.
210. "Grafted polymers as Oleophobic Low Adhesion Anti-Wetting Coatings", **U S Patent 9,206,269**, D/20121493Q-NP-US , Issued on December 8, 2015
211. "Solvent System Enabling Thin Film Deposition of Epoxy Adhesives For High Density Piezo Printhead Interstitial Bonding", **U S Patent 9,206,341**, D/20131472-US-NP, Issued 12/8/2015.
212. "Release Agent Composition For Solid Inkjet Imaging Systems For Improved Coefficient Of Friction", **U.S. Patent 9,216,588**, D/20120617-US-NP; Issued on December 22, 2015.
213. "Release Agent Composition For Improved Coefficient Of Friction"; **U S Patent 9,221,245**; D/ 20121708-US-NP; Issued on December 29, 2015.
214. "Grafted Polymers as Oleophobic Low Adhesion Anti-Wetting Coatings For Printhead Applications"; **U S Patent 9,233,533**; D/20121493Q-NP-US ; Issued on January 12, 2016.
215. "Imaging member for offset printing applications"; **US Patent 9,283,795**; Issued on 3/15/2016.
216. "Release Agent Composition for Solid Inkjet Imaging Systems for Improved Wettability"; **US Patent 9,296,219**; D/20121706-US-NP; Signed on April 21, 2014.
217. "Indirect Printing Apparatus Employing Sacrificial Coating On Intermediate Transfer Member", **U S Patent 9,303,185**, **D/20121457-US -NP** ; Issued on April 5, 2016.

218. "Sacrificial Coating and Indirect Printing Apparatus Employing Sacrificial Coating on Intermediate Transfer Member"; **US Patent 9,327, 519**; D/20141561-US-01; Issued on May 3, 2016.
219. "Biobased Toner Compositions", **U S Patent 9,329,512**; D/20130373-US01, Issued on May 3, 2016.
220. "Fluorosilicone Oleophobic Low Adhesion Anti-Wetting Coating"; **U S Patent 9,353,291**; 5/31/2016.
221. "Transfix Surface Member Coating"; **U S Patent 9,353,290**; D/20130965-US-NP, Issued 5/31/2016.
222. "Printhead Having Two Adhesives", **US Patent 9,427,969**; D/20121130-US-NP; August 30, 2016.
223. "Method of Etching Using Inkjet Printing"; **U S Patent 9,447,504**; D/20150268US01, issued 9/20/16
224. "Anti-contamination Coating For Decurler Indenting Shaft"; **U S Patent 9,457,591**; D/20150226-US-NP; Issued on October 4, 2016.
225. "Release Agent Composition for Tandem Solid Inkjet Imaging Systems Having Improved Wettability", **US Patent 9,481,164**; D/20121707-US-NP;, Issued on November 1, 2016."
226. Imaging Plate Coating Composite Composed of Fluoroelastomer And Aminosilane Crosslinkers", **US Patent 9,494,884**; D/ 20130850-US-NP; Issued on November 15, 2016.
227. "Imaging member for offset printing applications"; **U S Patent 9,561,677**; D/20111387-US-NP ; issued on February 7, 2017.
228. "Imaging Member For Offset Printing Applications", **US Patent 9,567,486**; D#20111386-US-NP, Issued on February 14, 2017.
229. "Imaging member for offset printing applications", **US Patent 9,592,698**; D#20111580-US-NP, issued on March 14, 2017.
230. "Imaging member for offset printing applications" ; **US Patent 9,616,654**; D/20111271-US-NP ; Issued on April 11, 2017.
231. "B-Stage Film Adhesive Compatible With Aqueous Ink For Printhead Structures Interstitial Bonding In High Density Piezo Printheads Fabrication For Aqueous Inkjet", **US Patent 9,623,660**; D/20130827-US-NP, issued on April 18, 2017.
232. "Fluorosilicone Oleo phobic Low Adhesion Anti-Wetting Coating"; **U S Patent 9,643,210**; D/20120698-US-02, Issued on May 9, 2017.
233. "Stabilizers Against Toxic Emissions in Imaging Plate or Intermediate Blanket Materials", **US Patent 9,649,834**; D/20121229-US-01, Issued on May 16, 2017
234. "Anti-Wetting, Low Adhesion Coatings For Aqueous Ink Printheads"; **US Patent 9,676,962**; D/20140457-US-01, issued on June 13, 2017.
235. " Decurler Indenting Shaft Ink-Release Coating For Increased Media Latitude", **US Patent 9, 690,247**; D/20150970US01, Issued on June 27, 2017.
236. "Sacrificial Coating and Indirect Printing Apparatus Employing Sacrificial Coating on Intermediate Transfer Member"; **US Patent 9,718, 964**; D/20141561US01; Issued on August 01, 2017
237. "Method For Rejuvenating an Imaging Member Of An Ink-Based Digital Printing System," **US Patent 9, 744,757**; D/20151432-US-01, issued on August 29, 2017.
238. "A New Imaging Plate Coating Composite Composed of Fluoroelastomer and Aminosilane Crosslinkers", **US Patent 9,796,192**; D/20130850-US-NP; issued on October 24, 2017.
239. "Release Agent Composition For Tandem Solid Inkjet Imaging Systems Having Improved Wettability", **U S Patent 9,884,480**; D/20121707US02; issued on February 6, 2018
240. "Use of Epoxy Film Adhesive with High Ink Compatibility and Thermal Oxidative Stability for Printhead Interstitial Bonding in High Density Printheads" , **U S Patent 9,890,306**; D/20131079-US-NP, Issued on February 13, 2018.
241. "Anti-Wetting, Low Adhesion Coatings For Aqueous Ink Printheads"; **US Patent 9,895,896**; D/20140457-US-02, issued on February 20, 2018.
242. "Imaging Plate Multi-Layer Blanket", **US Patent 9,950,549**; D/20150856US01, Issued 4/24/2018.
243. "Printing Plates Doped with Release Oils", **US Patent 9,956,801**; D/20110791-US-NP Issued 5/1/18.
244. "Multilayer Imaging Blanket Coating"; **US Patent 9,956,760**, D/20140384-US01, Issued 5/1/2018.

245. "Controlled Silicone Release During Xerographic Printing to Create Pressure Sensitive Adhesive Release Coat"; **U S Patent 9,981,458**; D/20140504-US-NP; issued on May 29, 2018.
246. "Method For Rejuvenating an Imaging Member Of An Ink-Based Digital Printing System," **US Patent 10,000,052**; D/20151432-US-02, issued on June 19, 2018.
247. "Systems And Methods For Implementing a Vapor Condensation Technique For Delivering a Uniform Layer of Dampening Solution In An Image Forming Device Using a Variable Data Digital Lithographic Printing Process"; **US Patent 10,022, 951**; D/20130943-US-NP, issued July 17, 2018.
248. "B-Stage Film Adhesive with Aqueous Ink for Printhead Structures Interstitial Bonding in High Density Piezo Printheads Fabrication for Aqueous Inkjet"; **US Patent 10,052,874**; D/20130827-US02, Issued on August 21, 2018.
249. "Charge Control Agent-Silicone Oils And Uses Thereof"; **US Patent 10,126,672**; D/20150322-US-01; Issued on November 13, 2018.
250. "Use of Epoxy Film Adhesive with High Ink Compatibility and Thermal Oxidative Stability for Printhead Interstitial Bonding in High Density Printheads", **US Patent 10,150,898**; D/20131079-US-02; Issued on 11 Dec 2018.
251. "Fuser Fluid Blend"; **U S Patent 10,175,598**; ID/20160790; filed on January 8, 2019.
252. "Method Of Printing, Image Forming Apparatus And Print", **US Patent 10,214,662**; D/20180152-US 01, issued on Feb 26, 2019.
253. "Printhead Having Two Adhesives" **U S Patent 10,322,583**; D/20121130US02; issued 6/18/2019.
254. "Fluorosilicone Composite And Formulation Process For Imaging Plate"; **U S Patent 10,384, 441**, D/20150584-US01; Issued on 20 Aug 2019.
255. "Printhead Having Two Adhesives", **US Patent 10,710,367**; D/20121130USNP; issued 7/14/2020.
256. "Controlled Silicone Release During Xerographic Printing to Create Pressure Sensitive Adhesive Release Coat"; **U.S. Patent 10,773,506**; D/20140504US02; Issued on September 15, 2020.
257. "Printer Having An Aqueous Ink Drying System That Attenuates Image Quality Defects"; **US Patent 10,821,747**; D/20190046-US-01, Issued on November 3, 2020.
258. "Release Fluid Composition", **US Patent 10,928,754**; D/20180124US01, issued on February 23, 2021
259. "Release Fluid Composition", **US Patent 10,928,754**; D/20180124US01, issued on 23 Feb 2021.
260. "System And Method To Detect Ink Drop Directionality Degradation And Perform Remedial Measures To Prevent Failing Inkjets In Printheads"; **US Patent 11,059,289**; D/20190256US01, Issued on 13 Jul 2021.
261. "Multilayer Imaging Blanket Coating"; **US Patent 11,230,135**; D/20180920-US-01; issued on Jan 25, 2022.
262. "Removable Support Material Comprising Tackifier For Additive Manufacturing"; **US Patent 11,248,131**; D/20160153-US-01; Issued on Feb 15, 2022
263. "Imaging Blanket With Thermal Management Properties", **US Patent 11,298,964**; D/20180845-US-01, issued on April 12, 2022.
264. "Media transport belt that attenuates thermal artifacts in images on substrates printed by aqueous ink printers"; **US Patent 11,318,760**; D/20190251-US01, issued on May 3, 2022
265. "Multi-layer Imaging Blanket", **US Patent 11,498,354**; D/20190393US01, issued on November 15, 2022.
266. "Non leaching Cooling Belt to Reduce the Plowing IQ Defect", **US Patent 11,724,531**; D/20210024US01, issued on August 15, 2023.
267. "Method And System For Operating A Metal Drop Ejecting Three-Dimensional (3D) Object To Form Vias In Printed Circuit Boards With Conductive Metal", **US Patent 11,737,216**; D/20200427US01; Issued on 22 Aug 2023.
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