Rolf Biernath, PhD

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https://www.linkedin.com/in/rolfbiernath

I help you invigorate your products through creative use of cutting-edge AI, science, and engineering. As a passionate, results-focused, and collaborative science, technology, and engineering professional I have expertise in defining and solving complex customer problems in light of technology trends. 58 US patents demonstrate a history of developing innovative practical solutions to meet customers' current and future needs. Consult with clients to improve and expand their business with AI and other advanced technologies. Excel in a broad range of science, technology, and engineering disciplines. Skilled in building relationships and communicating with customers, suppliers, and integrators to fully define technical advances and bring innovations to market. Support and guide project teams and motivate product developers to produce groundbreaking innovation on time and within budget. Skilled at explaining complex technology to non-experts.

CAREER HISTORY

Biernath Consulting, Inc.
St. Paul, MN

Science, Technology, and Engineering New Products
2016-present

3M Corporation
St. Paul, MN

Product, Process, Materials, and Systems Development
1990 – 2022

IBM Corporation
Essex Junction, VT

Semiconductor Fab Pilot Process Development
1981-1985

EDUCATION

Univ of California, Berkeley
Ph.D. in Chem Engr.
1985-1990

Georgia Institute of Technology, Atlanta
B.S. in Chem Engr.
High Honors
1980-1985

EXPERTISE

- Identify product innovation opportunities with AI and advanced technology
- Define, validate, and develop new-to-world products and product lines that create new growth:
  - Leads teams through systematic innovation in virtual environments.
  - Identifies areas of highest risk to focus on minimizing risks quickly.
  - Rapidly prototypes and tests critical components and systems.
- Deliver new science and technologies rapidly, enabling quick progress to define problems, identify root causes, and generate viable solutions.
- Solve complex science, technology, and engineering problems with attainable solutions.
- Deliver value quickly, long-term and cost-effective.
- Develop intellectual property, find competitive IP weaknesses, and develop critical patent application strategy.
- Work strategically and tactically to achieve rapid progress.

KEY SUCCESSES

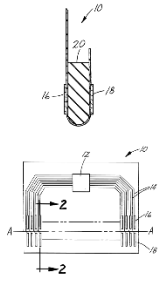
- Presented on AI tools for Product Innovation at Applied AI Conference 2023, ASQ Conference 2023, MN PDMA 2024 and Inventor's Network 2024
- Invented a solution that grew client's business by 50% and another that reduced product cost by 98% while simplifying its operation.
- 58 U.S. Patents in a broad range of technologies and products, including:
  - an IoT-informed physics digital twin predicting replenishment needs
  - novel optical sensors (visible, near-IR, mid-IR) and light sources
  - imaging sensor camouflage for ADAS, optical films
  - ADAS automated license plate & traffic sign recognition
  - high brightness, sunlight-visible LCD displays
  - adhesives & tapes, microfluidics, electronic packaging
- Created products across 3M B2B and B2C Businesses while in many of the major labs: Connected Automation, Electronic Materials, Adhesives & Tapes, Microreplication, Display & Graphics, Electronics & Energy, Incubator.
- On-Site Prototyping Lab: electronic, mechatronic, optoelectronic and test.

HOW WE CAN WORK TOGETHER

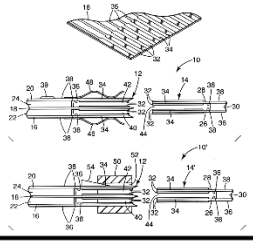
- Product and Service Innovation through creative science and engineering
- Fractional CTO | Fractional Senior Scientist | Applied AI Product Integration
- Objective independent evaluation of new business concepts and underlying technologies
- Provide second level of review, oversight, and coaching for engineering teams
- Flexible, on-call rapid-response expert to tackle production, design issues, or IP issues

Select Patents from Portfolio:

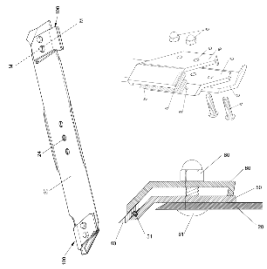
US 5433632
Flexible circuit connector



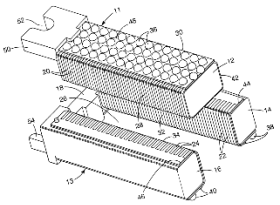
US 5741148
Electrical connector assembly with interleaved multilayer structure and fabrication method



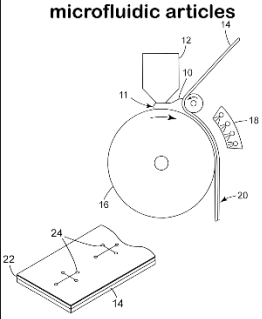
US 5839263
Lawnmower blade with replaceable knives



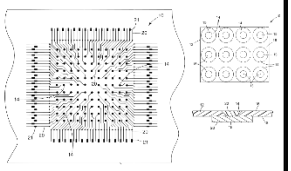
US 5876215
Separable electrical connector assembly having a planar array of conductive protrusions



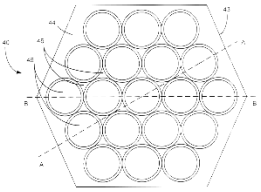
US 6375871
Methods of manufacturing microfluidic articles



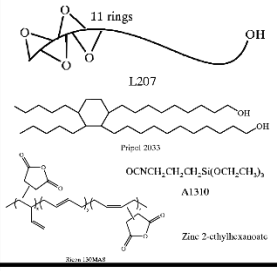
US 6451191
Film based addressable programmable electronic matrix articles and methods of manufacturing and using the same



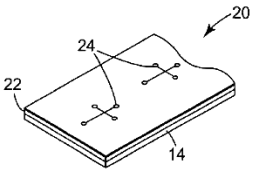
US 6577432
Post and pocket microstructures containing moveable particles having optical effects



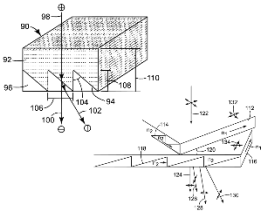
US 6664318
Encapsulant compositions with thermal shock resistance



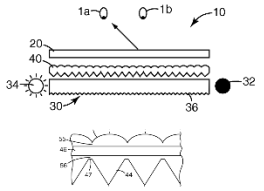
US 6761962
Microfluidic articles



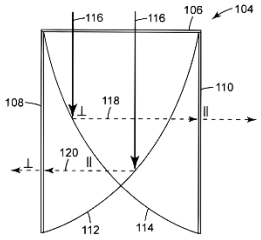
US 7418202
Article having a birefringent surface and microstructured features having a variable pitch or angles for use as a blur filter



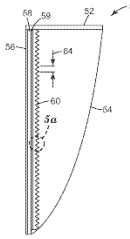
US 8068187
Stereoscopic 3D liquid crystal display apparatus having a double sided prism film comprising cylindrical lenses and non-contiguous prisms



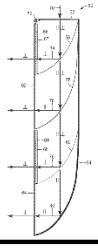
US 8149351
Passive and hybrid daylight-coupled backlights for sunlight viewable displays



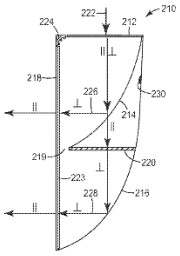
US 8228463
Passive daylight-coupled backlight with turning film having prisms with chaos for sunlight viewable displays



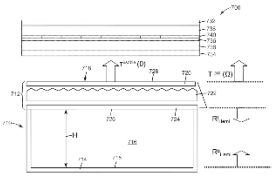
US 8339542
Passive and hybrid daylight-coupled N-stack and collapsible backlights for sunlight viewable displays



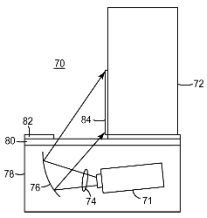
US 8384852
Hybrid daylight-coupled backlights for sunlight viewable displays



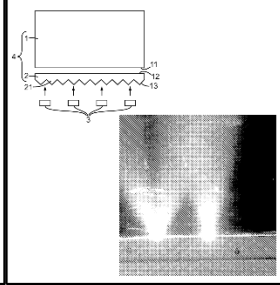
US 8523419
Thin hollow backlights with beneficial design characteristics



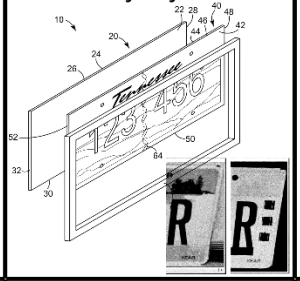
US 8919969
On-product projection for digital merchandizing



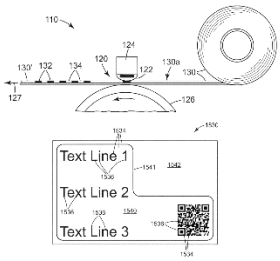
US 9879157
Microstructured transfer tapes



US 10417534
Optically active materials and articles and systems in which they may be used



US 10495801
Patterned marking of multilayer optical film by thermal conduction



US 10909607
Systems, methods and devices for controlling humidity in a closed environment with automatic and predictive identification, purchase and replacement of optimal humidity controller

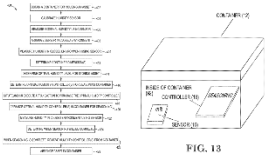


FIG. 13

US 11163099
Spectrally selective light control film

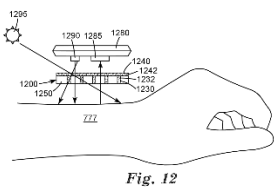


Fig. 12

US 11187576
Optical filters having spatially variant microreplicated layers

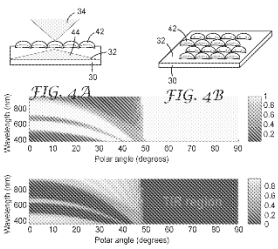
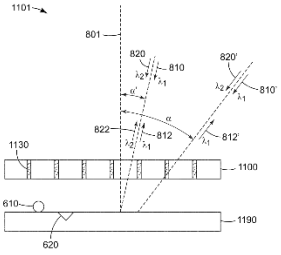


FIG. 4A FIG. 4B

US 11640019
Spectrally selective retroreflective system



US 11686891
Angularly and spectrally selective detector and light source systems