

Dmitry Vinograd

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S U M M A R Y

Chemical process engineer with 30+ years of diverse experience in chemical and biotech industry. Managed chemical process development groups, supervised engineers and technicians. Successfully led multiple complex research and development projects for bulk, fine and specialty chemicals including biotechnology.

Able to produce practical, implementable, innovative and cost-effective solutions built on solid theoretical background in chemical engineering, diverse application experience and proficiency in unit operations modeling, optimization, statistics, factorial DoE, computing. In depth technical expertise include process scale-up, pilot tests, automation and control, simulation, troubleshooting, safety and process hazardous analysis and cost analysis.

Direct hands-on equipment and process experience areas include chemical reactions and kinetics, distillation, extraction, adsorption, filtration and ultrafiltration (TFF), solids processing, heat transfer, crystallization, wet milling, drying and mixing.

Highly proficient in application of ASPEN simulation tools. Specialized in conceptual process design for complex separations. Modeling and optimization of various processes targeting process improvements and optimization, automation, batch manufacturing scheduling, plant capacity analysis.

Strong communication and presentation skills. Builds strong relationship with manufacturing personnel, tollers, vendors, suppliers and customers.

E M P L O Y M E N T H I S T O R Y

Consultant – Chemical engineering – Dimus Plus LLC (owner 2020 – present)

Director of Process Simulation – Novomer Inc, Boston, MA (2015-2019)

Principal Process Dev Engineer / Head of Eng Technology Lab – Joule Unlimited Inc.,
Bedford, MA (2012 – 2015)

Principal Process Engineer / DSP group Manager – DSM Nutritional products, Lexington, MA
(2008 – 2012)

Senior Process Engineer - Cabot Corporation, Performance products R&D,
Billerica, MA (2004 – 2008)

Senior Chemical Engineer - Waters Corporation, Chemical Manufacturing,
Taunton, MA (2002 –2004)

Senior Process Engineer - Dead Sea Bromine Group, R&D and Pilot Plant,
Beer-Sheba, Israel (1991 – 2001)

R E C E N T E X P E R I E N C E

- Chemical vapor deposition (CVD)
- Plastic waste reprocessing to diesel fuel
- Li-ion batteries: metals (Co, Ni, Mn, Li, Cu, Al) recycling process
- Lithium carbonate purification and LiF manufacturing process
- Process design and development for super-pure acrylic acid and biodegradable polyesters manufacturing. Overall plant modeling, pilot scale-up, capital cost and energy analysis, LCA, special kinetics modeling for catalytic and polymerization processes, control strategy selection and safety analysis. Led process modeling group. Submitted 9 inventions in the last 3 years.

- Batch process design for carbonylation catalyst manufacturing at toller facility. Recipe-driven process model in Aspen Batch+, batch scheduling, optimization and debottlenecking.
- Development and revision of pilot and manufacturing M&EB, SOP, PFD, P&ID and layouts, performing safety reviews, PHA, HAZOP, risk assesement. Preparing technology transfer packages, toller selection and supervision of toll manufacturing, working with vendors and contractors on equipment selection, quotation and acquisition.
- Leading Ethanol Recovery program for bio-ethanol commercialization. Conceptual process design and development for photosynthetic bioethanol and biodiesel recovery from cell culture to fuel grade specifications, minimization of manufacturing costs.
- Head of technology lab: experimental work in special distillation, gas scrubbing, liquid and gas adsorption, cell separation, cell lysis, saponification, wet milling, spray drying, solvent extraction, TF filtration.
- Supervising technical staff and mentoring junior engineers.

E D U C A T I O N

M.S. in Chemical Engineering – University of Chemical Technology, Moscow, Russia

PhD in Chemical Engineering – Institute of Physical Chemistry, Moscow, Russia (*Thesis on "Design and optimization of multicomponent distillation trains with heat integration"*)

S E L E C T E D A C C O M P L I S H M E N T S

- Designed and optimized Lithium Fluoride manufacturing plant (Dimus Plus)
- Designed commercial plant for acrylic acid manufacturing (240 KTA) via beta-propiolactone route (Novomer).
- Proposed substantial improvents in bioethanol recovery: developed special tools for optimal design of recovery plant with high turndown ratio (Joule UT).
- Designed downstream processes for recovery of Zeaxantin in a highly pure crystalline form from fermented media. Batch+ simulation and retrofitting the whole plant (DSM, Germany)
- Led commercialization projects for manufacturing carotenoids from genetically modified yeast cultures: downstream process design and technology transfer to tolling facilities. Products include beta-Carotene as vitamin A precursor, Astaxantine as fish colorant, Lutein as poultry food additive, Lycopene as food colorant. (DSM Nutritional Products, Fermic S.A.- Mexico).
- Optimized ultrafiltration process of purification carbon black nanoparticles reducing spray drying volume and manufacturing costs 2.5x (Cabot)
- Redesigned Propanol recovery plant resulting in 3x capacity increase and 10x wastes reduction (Broomchemie, Netherlands)

C O M P U T E R S K I L L S

Process simulation tools: Aspen+, Batch+, Ratefrac, Batchfrac, Icarus, Dynamics, Process Explorer (all AspenTech), Visimix (Visimix), Scientist (Micromath), Design expert, Statgraphics, MS Office, Project, Visio.

C O U R S E S & T R A I N I N G

- Electolytes separation (AspenTech, 1994)
- Batchplus scheduling (AspenTech, 1996)
- Advanced multicomponent separations – SPLIT (Aspentech,1996)
- Reactor automation software (Argonaut Tech., 2001)
- Chromatography and HPLC analysis (Waters, 2002)
- Organic synthesis: surface modification of silica adsorbents (Waters, 2003)
- Wet milling course (Institute of Particle Technology, Germany, 2007)
- Aspen Custom Modeler and Aspen Adsorption (Aspentech, Houston 2014)