

Ivan Kashuba

R&D Chemist & Research Engineer | Scientific Support - Materials & Polymers | Troubleshooting & Data

Türkiye | Remote-first | Available during EU business hours | Open to international relocation

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PROFESSIONAL SUMMARY

Scientific R&D professional with 10+ years of hands-on experience in materials, single crystals, lightguides, polymers, coatings, monomer manufacturing, thermal and vacuum processing, and laboratory troubleshooting. Connects experimental data, instrument results and operating conditions to identify likely root causes, corrective actions and clear technical workflows. Experience includes NMR, DSC, DTA, TGA, spectrophotometry, Excel-based analysis and scientific documentation. Recent portfolio work translates Excel-based chemical-process calculations into parameter-driven Python models with validation, CSV outputs and visualisations.

CORE SKILLS

SCIENTIFIC DATA & REPRODUCIBLE WORKFLOWS Excel data analysis and visualization; Python for engineering calculations, data processing and visualization; Git/GitHub; JSON/CSV parameter workflows; scientific literature research; MestReNova; ChemDraw/Chem3D; Reaxys.

ANALYTICAL & PROCESS METHODS NMR techniques such as ^1H , ^{13}C , HSQC, HMBC; DSC with nitrogen cooling; DTA/TGA; spectrophotometry; thermal-vacuum synthesis and distillation; filtration, drying and vacuum systems; electron-beam sputtering/vacuum deposition; powder-coating equipment and micronization; light-guide and lense extrusion tooling.

TECHNICAL & R&D Formulation and process troubleshooting; coatings, monomer for polymers, monocrystals and lightguides manufacturing; quality investigations; technical documentation and workflow mapping; data interpretation; cross-functional laboratory and production collaboration.

SELECTED PYTHON ENGINEERING PROJECTS

GitHub portfolio: github.com/ivan-kashuba-rd

- **Reactor Dissolution Calculation** - Theoretical stirred-reactor model for agitator-speed scenarios, mass transfer, dissolution time, motor-capacity limits and energy indicators; baseline checked against the source Excel calculation.
- **Pneumatic Dryer Performance Calculator** - Theoretical heat- and mass-transfer model for gas velocity, pipe diameter, drying time, required pipe length and pressure drop; produces CSV outputs and plots.
- **Stirred-Vessel Heating Comparator** - Compares paddle, anchor and propeller impellers across rpm ranges, evaluating heat transfer, predicted heating time and diminishing-return behaviour; checked against the source spreadsheet.

PROFESSIONAL EXPERIENCE

Independent Research & Professional Development

Feb 2025 - Present

Self-employed | Türkiye

- Conduct independent literature research in materials, polymers, coatings, monomer processes and scientific data workflows.
- Convert selected Excel-based chemical-process coursework calculations into reproducible Python models with configurable inputs, validation checks, CSV outputs and visualisations.
- Build and document GitHub-based engineering models for stirred-reactor dissolution, pneumatic drying and jacketed-vessel heating; baseline outputs are checked against original coursework spreadsheets while strengthening technical documentation, Git/GitHub version control and remote R&D workflows.

Research Engineer | Powder Coatings Laboratory Setup & Process Improvement

Jul 2024 - Jan 2025

FRISHBERG Ltd. | Yekaterinburg, Russia

- Contributed to establishment and continued development of a powder-coatings R&D laboratory by transferring, positioning, connecting and commissioning selected production equipment for laboratory use.
- Investigated alternative formulations and replacement components for mass-produced powder coatings through laboratory trials; applied English-language technical documentation during setup and development work.
- Installed and operated DSC equipment with nitrogen cooling; measured and interpreted thermal transitions and reaction enthalpy in powder-coating systems.
- Processed and visualized Excel data to analyze relationships among gel time, component content, powder humidity and cathodic-delamination diameter; calculated material quantities and identified correlations.
- Troubleshot liquid heat-exchanger, micronization and storage-sealing issues, improving temperature control, powder-mixture homogeneity and product quality; produced approximately 30 kg of experimental powder-coating batches.

PROFESSIONAL EXPERIENCE (CONTINUED)

Chemist-Technologist | Monomer Manufacturing & Process Improvement

Aug 2021 - Apr 2024

Medin-N | Ekaterinburg, Russia

- Maintained technical process documentation and process sheets for glycolide (1,4-dioxane-2,5-dione) synthesis, purification, filtration and thermal-vacuum operations.
- Investigated and resolved quality deviations in monomer production for biodegradable polymer applications, including raw-material dehydration, storage-related oxidation, filtration and thermal-vacuum processing.
- Identified ineffective raw-material dehydration and supported installation of an improved drying cabinet; defined operating temperature ranges for thermal-vacuum synthesis and distillation.
- Improved filtration of monomer solution from oligomers, reducing overheating and unintended oligomer dissolution before filtration; contributed to production of approximately 600 kg of monomer.
- Reduced preparation time for a heat-crosslinking polymer-dye protective solution from two weeks to a few hours; performed ^1H NMR analysis and identified rapid moisture-associated monomer oligomerization.

Process Engineer | Optical Coatings

Apr 2021 - Jul 2021

ODV Prescription Optics Plant | Ekaterinburg, Russia

- Supported cleaning and adhesion processes for polymer ophthalmic lenses and optical interference coatings.
- Transferred an interference-coating process to new electron-beam sputtering equipment operated under low pressure; measured polymer moisture content and coating transmission spectra.
- Maintained Excel process logs and investigated coating defects using microscopy, humidity, temperature and equipment operating parameters.

Research Engineer | Fiber Technology & Photonics Laboratory

Jan 2013 - Jul 2021

Fiber Technology & Photonics Laboratory | Ekaterinburg, Russia

- Worked in the same research laboratory where specialist-degree and postgraduate research in infrared light guides, single-crystal materials and photonics were completed.
- Played a key hands-on role in a cross-functional team that developed and implemented a flexible PMMA light-guide neonatal phototherapy lamp for treatment of hyperbilirubinemia in premature infants, currently used in clinical practice.
- Proposed laser engraving of PMMA light guides to create side-emitting illumination, identified suitable equipment suppliers and co-assembled an LED UV-curing unit for rapid connector fixation.
- Machined fiber connectors and attachment components; created a detailed written workflow for a substantial portion of the lamp production and assembly process; supported infrared light-guide processing and extrusion-related laboratory work.

EDUCATION & ADDITIONAL STUDIES

Ural Federal University | Postgraduate Qualification in Chemical Sciences

2015 - 2019 | GPA: 4.4/5.0

- Thesis: "Research and Development of Photonic Crystal Light Guides for a Wide IR Spectral Range." Refined the AgBr-AgI phase diagram using DTA; researched thermozone crystallization, single-crystal materials and hot extrusion of infrared light guides.
- Designed extrusion tooling in KOMPAS-3D, reviewed ANSYS-based structural-stress analysis performed by a simulation specialist, and calculated and built a tubular furnace for heating extrusion tooling.

Ural Federal University | Specialist Degree in Chemical Technology

2010 - 2015 | GPA: 4.4/5.0

- Specialization: Chemical Technology of Single Crystals, Materials and Electronic Products. Research focused on production and hot extrusion of infrared light guides based on silver-halide single crystals, including crystal machining, extrusion conditions and light-guide quality evaluation.

Ural Federal University Business School | Professional Retraining Diploma

2012 - 2015

- Enterprise Economics and Management. Coursework included profitability and cost calculations for a small-scale scientific production process, business planning, operations management and economic decision-making in industrial settings.

Ural Federal University | Additional Studies in Resource-Saving Technologies and Biotechnology

2023 - 2024

- Not completed due to international relocation. Selected practical coursework included molecular docking, protein-ligand interaction analysis, phylogenetic analysis, Excel-based engineering calculations and introductory Python data workflows.

LANGUAGES

English: B2, professional working proficiency | Russian: Native