

# James Wade

AI DEVELOPER TOOLS · ENTERPRISE R&D

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3,000

SCIENTISTS

AI strategy lead

84

SHINY APPS

50 R + 34 Python

35

PACKAGES

25 R + 10 Python

3x

POSIT::CONF

speaker

## ABOUT

I build AI-powered developer tools on Posit's stack and ship them at enterprise scale — 35 packages, 84 Shiny apps, and direct collaboration with Posit engineers. At Dow, I lead AI strategy for a 3,000-person R&D organization while navigating the same disruption reshaping how all software gets built. I've been building for what comes next.

## OPEN SOURCE

### shinymcp

CREATOR

Bridges Shiny apps and AI agents via the Model Context Protocol. Auto-detects inputs, tracks the reactive graph, and routes tools — so any Shiny app becomes an MCP server.

### deputy

CREATOR

Agentic AI workflows for R. Multi-agent delegation, tool policies, pre/post hooks, structured output, and streaming with a terminal CLI.

### measure

CREATOR

Tidymodels-native package for measurement science — brings psychometric and analytical measurement models into the tidymodels framework with a consistent, composable API.

### measure.sec

CREATOR

Size exclusion chromatography tools built on tidymodels. Calibration, molecular weight distribution analysis, and integration with the measure ecosystem.

### dsprrr

CREATOR

R port of Stanford NLP's DSPy framework — declarative, self-improving language programs. Prompt optimization, module composition, and cost tracking. Officially listed by Stanford.

### gptstudio

★ 800+ stars

CREATOR & MAINTAINER

Early-mover RStudio IDE addin integrating LLMs into the coding workflow. Multi-provider support, published to CRAN. Paved the way for Posit's native AI tooling.

Also contributed to: [ellmer](#), [py-shiny](#), [shinychat](#), [tidyr](#), [dplyr](#), [parsnip](#), [embed](#), [rsample](#), [Stanford DSPy](#), [Axolotl](#), [Mistral.AI](#)

## SKILLS

### POSIT ECOSYSTEM

Shiny (R & Python)    RStudio IDE Extensions    bslib    shinychat    Quarto    Connect    Workbench    Package Manager

### AI & LLMS

Agentic Systems    MCP Protocol    RAG    DSPy / Prompt Optimization    Multi-Provider APIs    Claude Agent SDK    Vector Databases    Fine-Tuning

### SOFTWARE ENGINEERING

R    Python    TypeScript    Package Development (CRAN)    Git/GitHub    CI/CD    Docker    DuckDB/Arrow

### DATA SCIENCE & ENTERPRISE

Tidyverse    Tidymodels    MLOps    Statistical Modeling    Platform Administration

## EXPERIENCE

### Research Scientist

2022 – Present

Dow · Midland, MI

- Lead AI strategy for Dow's 3,000-person R&D organization and directly advise the CTSO on AI and digitalization priorities.
- Co-developed chat UI components and AI tooling directly with Posit engineers Joe Cheng, Garrick Aden-Buie, and Carson Sievert. Contributed to [ellmer](#), [py-shiny](#), [shinychat](#), and core [tidyverse](#) packages.
- Architected an AI-powered emissions monitoring platform serving 27 manufacturing sites across 6 countries, with an LLM pipeline that auto-converts Excel workbooks into production Python code.
- Co-developed an LLM-powered Patent Analysis tool highlighted to Dow's Board of Directors and Microsoft's leadership team.
- Scaled generative AI from proof-of-concept to enterprise-wide deployment, expanding secure access to frontier and open models across the organization.
- Built and deployed 84 Shiny applications (50 R, 34 Python) to Posit Connect — including ML model APIs, live data pipelines, and 19 AI-powered production apps.
- Authored 35 packages (25 R, 10 Python), establishing package development patterns and CI/CD workflows adopted organization-wide.
- Created [shinymcp](#), [deputy](#), [dsprrr](#), and [gptstudio](#) — open source AI developer tools spanning MCP protocol, agentic workflows, prompt optimization, and IDE integration.

### Associate Research Scientist

2020 – 2022

Dow · Midland, MI

- Founded and led the data science strategy team for Analytical Science, defining best practices for R, Python, and AI enablement across a 400-person organization.
- Designed and delivered the Citizen Data Science curriculum and led Posit Academy mentorship, achieving >90% training completion and mentoring 25+ professionals across multiple organizations.
- Key contributor to Dow's enterprise AI Strategy, defining the organizational operating model and leading the Scale & Standards sub-team.
- Led an AI-enabled plastic recycling project, building ML models that maintained product performance with increased recycled content — recognized with two internal awards.

### Senior Chemist

2018 – 2020

Dow · Midland, MI

- Pioneered a deep learning approach to modeling product performance in manufacturing, resulting in a patent submission and \$2.3MM+ in realized value.
- Built a Shiny-based Duty Drawback tool enabling \$2.5MM one-time and \$1.2MM annual savings for the supply chain organization.

### Postdoctoral Fellow

2017

University of Michigan · Ann Arbor, MI

- Biosensor and microfluidic research, supporting lab transition from UIUC to the University of Michigan.

<b>Graduate Research Fellow</b> <b>University of Illinois at Urbana-Champaign</b> · Urbana, IL <ul style="list-style-type: none"> <li>Developed biosensors and microfluidic tools for precision medicine, including multiplex diagnostic panels on silicon photonic microring resonator arrays.</li> <li>Integrated microring resonators with separation technologies for applications in industrial polymer analysis.</li> <li>Mentored 4 undergraduate and 3 graduate students; contributed to successful NSF and NIH proposals.</li> </ul>	2012 – 2017
<b>Undergraduate Research Fellow</b> <b>Furman University</b> · Greenville, SC <ul style="list-style-type: none"> <li>Published 2 research papers, delivered 14 presentations, and mentored 5 undergraduate students.</li> </ul>	2008 – 2012

## EDUCATION

<b>Doctor of Philosophy in Chemistry</b> <b>University of Illinois at Urbana-Champaign</b> · Urbana, IL	2012 – 2017
<b>Bachelor of Science in Chemistry</b> <b>Furman University</b> · Greenville, SC	2008 – 2012

## AWARDS & RECOGNITION

2021	<b>Technical Achievement Award (Project Lead)</b> Dow
2021	<b>Manufacturing Innovation Award (Project Lead)</b> Dow
2019	<b>Data Science Innovation Challenge Winner (1 of 3 selected — Project Lead)</b> Dow
2016	<b>ACS Division of Analytical Chemistry Graduate Fellowship</b> University of Illinois
2012 – 2015	<b>NSF Graduate Research Fellow</b> University of Illinois

## PUBLICATIONS

10 peer-reviewed publications listed below, plus 40 internal publications, 29 internal technical reports, and 8 internal filings for intellectual property disclosure.

- The Citizen Data Science program at Dow**  
Andrews K, Arturo S, Benedict M, Braun B, Clark B, Cook S, Curtis-Fisk J, D'Ottaviano F, Licquia T, Margl P, Moore J, Naler L, Singh P, Schmidt A, Sokolov A, Talbert J, **Wade JH**. *Digital Discovery*, 2025.
- A linear mass concentration detector for solvent gradient polymer separations**  
Mordan EH, **Wade JH**, Pearce E, Meunier DM, Bailey RC. *Analyst*, 2020.
- Recent advances in separation-based techniques for synthetic polymer characterization**  
Meunier DM, **Wade JH**, Janco M, Cong R, Gao W, Li Y, Mekap D, Wang G. *Analytical Chemistry*, 2020.
- Silicon Photonic Microring Resonator Arrays for Mass Concentration Detection of Polymers in Isocratic Separations**  
Mordan EH, **Wade JH**, Wiersma ZSB, Pearce E, Pangburn TO, deGroot AW, Meunier DM, Bailey RC. *Analytical Chemistry*, 2018.
- Microfluidic platform for efficient Nanodisc assembly, membrane protein incorporation, and purification**  
**Wade JH**, Jones JD, Lenov IL, Riordan CM, Silgar SG, Bailey RC. *Lab on a Chip*, 2017.
- Applications of optical microcavity resonators in analytical chemistry**  
**Wade JH**, Bailey RC. *Annual Review of Analytical Chemistry*, 2016.
- Rapid, multiplexed phosphoprotein profiling using silicon photonic sensor arrays**  
**Wade JH**, Alsop AT, Vertin NR, Yang H, Johnson MD, Bailey RC. *ACS Central Science*, 2015.
- Refractive index-based detection of gradient elution liquid chromatography using chip-integrated microring resonator arrays**  
**Wade JH**, Bailey RC. *Analytical Chemistry*, 2014.
- A unified mechanism for abiotic adenine and purine synthesis in formamide**  
Hudson JS, Eberle JF, Vachhani RH, Rogers LC, **Wade JH**, Krishnamurthy R, Springsteen G. *Angewandte Chemie*, 2012.
- Synthesis of cis and trans Bis-alkynyl Complexes of Cr(III) and Rh(III) Supported by a Tetradentate Macrocyclic Amine: A Spectroscopic Investigation of the M(III)-Alkynyl Interaction**  
Sun C, Turlington CR, Thomas WW, **Wade JH**, Stout WM, Grisenti DL, Forrest WP, VanDerveer DG, Wagenknecht PS. *Inorganic Chemistry*, 2011.