



## Marcus J. Jellen

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Marcus Jellen is a Technical Advisor at Haley Guiliano, where his practice focuses on drafting and prosecuting patent applications for pharmaceutical, biotechnology, and other life science clients.

Prior to joining the firm, Marcus worked as a Synthetic Chemist at Element Biosciences where he improved Next-Generation Sequencing systems by developing new dye scaffolds with specific photophysical profiles and improved water solubility. His work there also involved exploring unprecedented reactions on dyes that yielded multiple patents. Additionally, Marcus spent time at Intel Corp. where he worked as a chemical-mechanical-planarization engineer. While there, his responsibilities included process development across several layers and technology nodes and sustaining production lines to meet company goals.

Marcus completed his Ph.D. at the University of California, Los Angeles, where he studied organic chemistry. His doctoral research focused on the design and synthesis of stimuli-responsive complex small molecules and materials. Using synthetic and computational methods, he developed the most efficient molecular spur gear to date and outlined strategies to observe long-sought-after gearing behavior in molecules. Marcus also developed the first amphidynamic material featuring dynamic organic radicals and alongside researchers at Bowling Green University, disclosed its utility for Quantum Information Science. Additionally, Marcus gained expertise in solid-state NMR spectroscopy and other forms of materials characterization allowing him to collaborate with multiple researchers around the globe.

Before his Ph.D., Marcus obtained his B.S. degree in chemistry with a minor in physics from the University of Wisconsin – Milwaukee in 2015. While there, he researched the asymmetric synthesis of oxindole-based natural products such as Horsfiline. He also derivatized benzofuran-based NSAIDs destined to be opioid replacements for pain mediation.

## Related Practice Areas

- Patent Preparation and Prosecution

## Related Industries

- Pharmaceuticals and Chemicals
- Biotechnology
- Medical Devices

## Publications

- Chen, X.; Ghovvati, M.; Wang, Z.; **Jellen, M. J.**; Mostafavi, A.; Dana, R.\*; Annabi, N.\* Engineering a Drug Eluting Ocular Patch for Delivery and Sustained Release of Anti-Inflammatory Therapeutics. *AICHE* **2023**, *69*, e18067.

- Colin-Molina, A.; Arcudia, J.; López-López, E. R.; **Jellen, M. J.**; García-González, M. C.; Merino, G.\*; Rodríguez-Molina, B.\* **Multicomponent Crystals with Two Fast Reorienting Constituents Over Perpendicular Noncovalent Axes.** *Growth Des.* **2022**, *22*, 673-680.
- **Jellen, M. J.**; Jiang, X.; Benders, S.; Adams, A.\*; Garcia-Garibay, M. A.\* **Slip/Stick Viscosity Models of Nanoconfined Liquids: Solvent-Dependent Rotation in Metal–Organic Frameworks.** *Org. Chem.* **2021**, *87*, 1780-1790.
- **Jellen, M. J.**; Liepuoniute, I.; Jin, M.; Jones, C. G.; Yang, S.; Jiang, X.; Nelson, H. M.\*; Houk, K. N.\*; Garcia-Garibay, M.\* **Enhanced Gearing Fidelity Achieved Through Macrocyclization of a Solvated Molecular Spur Gear.** *Am. Chem. Soc.* **2021**, *143*, 7740-7747.
- Jin, M.\*; Ando, R.; **M. J.**; Garcia-Garibay, M. A.\*; Ito, H.\* **Encapsulating N-Heterocyclic Carbene Binuclear Transition-Metal Complexes as a New Platform for Molecular Rotation in Crystalline Solid-State.** *J. Am. Chem. Soc.* **2021**, *143*, 1144-1153.
- Liepuoniute, I.; Navarro-Huerta, A.; **Jellen, M. J.**; Arcudia, J.; Teat, S.; Toscano, R.; Merino, G.; Rodríguez-Molina, B.\* **Tailoring the cavities of hydrogen-bonded amphidynamic crystals using weak contacts: towards faster molecular machines..** *Sci.* **2021**, *12*, 2181-2188.
- **Jellen, M. J.**; Garcia-Garibay, M.\* **Correlated motion and mechanical gearing in amphidynamic crystalline molecular machines.** *Chem. Sci.* **2020**, *11*, 12994-13007.
- **Jellen, M. J.**; Ayodele, M. J.; Cantu, A.; Forbes, M. E.\*; Garcia-Garibay, M.\* **2D Arrays of Organic Qubit Candidates Embedded into a Pillared-Paddlewheel Metal–Organic Framework.** *Am. Chem. Soc.* **2020**, *43*, 18513-18521.
- Colin-Molina, A.; **Jellen, M. J.**; Rodríguez-Hernández, J.; Cifuentes-Quintal, M. E.; Barroso, J.; Toscano, R.; Toscano, R. A.; Merino, G.; Rodríguez-Molina, B.\* **Hydrogen-Bonded Crystalline Molecular Machines with Ultrafast Rotation and Displacive Phase Transitions.** *Eur. J.*, **2020**, *26*, 1-8.
- Colin-Molina, A.; Velázquez-Chávez, D.; **Jellen, M. J.**; Rodríguez-Cortés, L. A.; Cifuentes-Quintal, M. E.; Merino, G.; Rodríguez-Molina, B.\* **Dynamic characterization of crystalline fluorophores with conformationally flexible tetrahydrocarbazole frameworks.** *CrystEngComm*, **2020**, *22*, 3789-3796.
- Jiang, X.; Song, Y.; **Jellen, M. J.**; Houk, K.\*; Garcia-Garibay, M.\* **Molecular Spur Gears with Triptycene Rotators and a Norbornane-Based Stator.** *Lett.*, **2020**, *22*, 4049-405.
- Aguilar-Granda, A.; Colin-Molina, A., **Jellen, M. J.**; Núñez-Pineda, A.; Toscano, R. A.; Rodríguez-Molina, B.\* **Triggering the dynamics of a carbazole-p-[phenylene-diethynyl]-xylene rotor through a mechanically induced phase transition.** *ChemComm.*, **2019**, *55*, 14054-14057.
- Jiang, X.; Duan, H.-B.\*; **Jellen, M. J.**; Chung, T.S.; Liang, Y.; Garcia-Garibay, M.A.\* **Thermally Activated Transient Dipoles and Rotational Dynamics of Hydrogen-Bonded and Charge-Transferred Diazabicyclo [2.2.2]Octane Molecular Rotors.** *Am. Chem. Soc.*, **2019**, *141*, 16802-16809.
- Colin-Molina, A.; **Jellen, M. J.**; Garcia-Quezada, E.; Cifuentes-Quintal, E.; Murillo, F.; Barroso, J.; Pérez-Estrada, S.; Toscano, R. A.; Merino, G.; Rodríguez-Molina, B.\* **Origin of the isotropic motion in crystalline molecular rotors with carbazole stators.** *Sci.*, **2019**, *10*, 4422-4429.
- Colin-Molina, A.; Karothu, D. P.; **Jellen, M. J.**; Toscano, R. A.; Garcia-Garibay, M. M.\*; Naumov, P.\*; Rodríguez-Molina, B.\* **Thermosolient Amphidynamic Molecular Machines: Motion at the Molecular and Macroscopic Scales.** *Matter*, **2019**, *1*, 1033-1046.
- Ahmed, S. A.; Hinz, D. J.; **Jellen, M. J.**; Hossain, M. M.\* **A Concise Synthesis of Potential COX Inhibitor BRL-37959 and Analogs Involving Bismuth(III) Catalyzed Friedel-Crafts Acylation.** *Biodiversity*, **2018**, *15*, e1800334.

## Honors & Awards

- Majeti-Alapati Distinguished Dissertation Award (UCLA, 2021),
- Majeti-Alapati Excellence in Research Award (UCLA, 2020),
- NSF Interational Research Experiences for Students Fellow (UCLA, June – August 2018),
- Three-Time Support for Undergraduate Research Fellow (UWM, June 2014, September 2014, June 2015).

## Education

- Ph.D., Organic Chemistry, 2021, University of California, Los Angeles.
- B.S., Chemistry, 2015, University of Wisconsin - Milwaukee, Minor in Physics, Summa Cum Laude