

## Tuo Wang

Carl H. Brubaker Professor

Department of Chemistry, Michigan State University

wangtuo1@msu.edu; www.tuowanglab.com

### EDUCATION

Ph.D. Physical Chemistry – Massachusetts Institute of Technology, Cambridge, MA, 2016

Ph.D. Advisor: Dr. Mei Hong

Structure and dynamics of plant cell walls and membrane peptides from solid-state NMR

BSc Chemistry – Nankai University, Tianjin, China, 2010

### ACADEMIC BACKGROUND

07/2025-present Carl H. Brubaker Professor, Dept. of Chemistry, Michigan State University

08/2022-07/2025 Carl H. Brubaker Associate Professor, Dept. of Chemistry, Michigan State Univ.

08/2021-08/2022 Associate Professor, Department of Chemistry, Louisiana State University

07/2017-08/2021 Assistant Professor, Department of Chemistry, Louisiana State University

02/2016-07/2017 Postdoctoral Associate, MIT. Advisor: Dr. Mei Hong

### HONORS & AWARDS

2025 AMPERE Prize for Young Investigators in Magnetic Resonance, awarded at 21<sup>th</sup> EUROMAR

2025 Horace S. Isbell Award, ACS Carbohydrate Division, awarded at 2025 ACS meeting

2023 Varian Young Investigator Award in Magnetic Resonance, awarded at 64<sup>th</sup> ENC conference

2022 The inaugural Carl Brubaker professorship, Michigan State University

2021 Anatole Abragam Prize, International Society of Magnetic Resonance (ISMAR)

2020 CAREER award, U.S. Department of Energy (DOE)

2020 CAREER award, National Science Foundation (NSF)

2019 Ralph E. Powe Junior Faculty Enhancement Award, Oak Ridge Associated Universities (ORAU)

2015 Chinese government award for outstanding self-financed students abroad

2014 Jinshan research excellence award, Oversea Chinese Magnetic Resonance Society

2014 Alpha Chi Sigma Award for research excellence, Iowa State University

2012 Cotton Uphaus award for research excellence, Iowa State University

### RESEARCH INTEREST

- Developing methods to enable atomic-level analysis of intact and living cells of green microalgae; understanding the structure-function of carbohydrates and associated macromolecules
- Determining the cell wall architecture of fungal pathogens *Aspergillus*, *Candida*, *Rhizopus*, and *Cryptococcus*; examining the structural effects of antifungal drugs
- Determining lignin-carbohydrate packing in grasses and woody plants, which is found to be conformation-dependent and stabilized by electrostatic interactions between polar functionalities
- Coded the Complex Carbohydrate Magnetic Resonance Database ([www.ccmrd.org](http://www.ccmrd.org)); implementing software to enable megadata analysis of polysaccharide structure in biomaterials

### RESEARCH EXPERIENCE

- Investigated the polymorphic structure of Alzheimer's  $\beta$ -amyloid fibrils by measuring chemical shifts, sidechain mobilities, long-range restraints and water-interaction
- For the first time, determined the zinc-bound structure of amyloid fibril via distance measurements that resolve the sidechain torsional conformation and restrain the supramolecular packing
- Investigated the structure and interactions of polysaccharides and protein-carbohydrate binding in plant primary cell walls: a new view of cell wall architecture and protein-mediated loosening
- Developed NMR methods to investigate the curvature induction and membrane localization of fusion peptide and influenza matrix protein by measuring relaxations and protein-lipid proximities

## TEACHING

Sole lecturer; 10 semesters; total enrollment of 627 students; 3 credit hrs per course

- CEM 484, Molecular Thermodynamics Spring 2025  
Enrollment: **107** No numeric evaluation at MSU
- CEM 484, Molecular Thermodynamics Spring 2024  
Enrollment: **80** No numeric evaluation
- CEM 987-002, Advanced NMR Theory and Applications Fall 2023  
Enrollment: 6 No numeric evaluation
- Chem 3492, Physical Chemistry II Spring 2022  
Enrollment: 47 Evaluation: 3.88/4.00
- Chem 3492, Physical Chemistry II Fall 2021  
Enrollment: 49 Evaluation: 3.93/4.00
- Chem 3492, Physical Chemistry II Spring 2021  
Enrollment: 41 Evaluation: 3.92/4.00
- Chem 7252, NMR Theory and Applications Fall 2020  
Enrollment: 11 Evaluation: 3.88/4.00
- Chem 1201, General Chemistry Spring 2020  
Enrollment: **197** Evaluation: 3.84/4.00
- Chem 3492, Physical Chemistry II Fall 2019  
Enrollment: **71** Evaluation: 3.76/4.00.
- Chem 4596, Chemical Thermodynamics Fall 2018  
Enrollment: 8 Evaluation: 3.93/4.00.
- Chem 4596, Chemical Thermodynamics Fall 2017  
Enrollment: 10 Evaluation: 3.96/4.00.

## Co-teaching

- CEM 311, Inorganic Chemistry. Fall 2025  
Enrollment: 15 1/3 semester; 15 hrs of lecture
- CEM 434, Advanced Analytical Chemistry Fall 2025  
Enrollment: 36 3 hrs of lecture

## FUNDING SUPPORT (\$8,008,752 for T. Wang's portion)

- **NIH-NIAID**, PI, \$1,895,339, R01AI173270, 01/10/2023-12/30/2027  
Revealing the cell wall organization of fungal pathogens and structural responses to antifungal drugs using cellular solid-state NMR
- **NIH-NIAID**, MPI, \$1,151,206 (T. Wang's portion), R01AI192892, 06/06/2025-05/31/2030  
Solving the puzzle of beta-1,6-glucan in the cryptococcal cell wall
- **DOE SC-BES**, PI, DE-SC0023702, \$500,000, 6/15/2023-6/14/2026  
Atomic resolution of lignin-carbohydrate interactions in native plant tissues from solid-state NMR
- **NSF-MCB**, PI, MCB-2517270, \$633,240, 08/01/2025-07/31/2029. Elucidating functional structure of complex carbohydrates in intact cells via development of <sup>1</sup>H-detected solid-state NMR approaches
- **NSF-CAREER**, PI, MCB-2308660, \$600,367, 01/2020-2/2025. *Before 2022: MCB-1942665*  
CAREER: Functional structure and dynamics of complex carbohydrates via sensitivity-enhanced solid-state NMR and database development
- **NIH S10**, PI, S10OD038174, \$378,171, 04/2025-4/2026. Ultrafast magic-angle spinning probe for <sup>1</sup>H detection solid-state NMR to advance structural analysis of macromolecular assemblies
- **DOE-CAREER**, PI, DE-SC0021210, \$338,474, 09/2020-08/2022. *Original obligated funds: \$754,884, 09/2020-08/2025. The remaining portion de-obligated due to group relocation.*  
Atomic resolution of lignin-carbohydrate interactions in native plant tissues from solid-state NMR

- **NIH-NIAID**, PI, R21AI149289, \$413,914, 02/05/2020-01/30/2022  
Using solid-state NMR spectroscopy to elucidate cell wall structural dynamics involved in virulence and drug response of *Aspergillus fumigatus*
- **DOE-EFRC**, funded project, DE-SC0001090, \$276,063, 05/2020-07/2022  
As part of DOE center for lignocellulose structure and formation (CLSF)
- **NSF**, PI, OIA-1833040, \$179,578, 10/2018-09/2020  
RII-Track 4: Elucidating the structure and interactions of complex carbohydrates in fungal and plant cell walls via dynamic nuclear polarization solid-state NMR
- **ACS-PRF**, PI, 61929-DNI6, \$110,000, 09/2021-08/2024  
Atomic resolution of kerogen structure by natural-abundance 2D  $^{13}\text{C}$ - $^{13}\text{C}$  correlation solid-state NMR
- **NSF-MRI**, PI, DBI-2019046, 08/2020-07/2023, \$1,361,751. *PI changed after Aug 2022 due to relocation.*  
MRI: Acquisition of a solid/liquid-state 700 MHz NMR instrument for the southeast
- **Other grants** (\$210,256 for T Wang): NIH-NIGMS, subcontract, \$130,296 for Wang, R01GM125853, 09/2024-08/2026, PI: Wei Qiang. LBCRP, PI, \$60,050 (07/2018-06/2019); Ralph Powe Award, PI, \$10,000 (06/2019-05/2020); WBC center: share for Wang: \$10,000 (5/2023-12/2023)

## PUBLICATIONS

(7,000 citations, H-index = 42)

### ----- Manuscripts under revision/review -----

99. Y Cai, C Ronders, V Mottini, H Yuan, S Kalpana, L, Xing, I Singh, D Fu, K Zhao, L Heller, K Nguyen, B Waller, T Wang, G Bonito, J Li, Mycoelectronics: bioprinted living fungal bioelectronics for artificial sensation. *Submitted*.
98. M Nokab, C Vojvodin, O Alghazwat, EA Zeitoun, M Vanderveken, E Caron, I Gautam, D Debnath, BK Husband, FL Hatton, C Martin-Olmos, FH Marchesini, T Wang\*, KO Sebakhy\*. Tuning alginate and pectin hydrogels: Effects of solution viscosity and crosslinking ions revealed by solid-state NMR and rheology. *Submitted*.
97. R Sharma, D Parashar, M Nokab, A Jacob, T Wang, S Puri. Signaling mucin Msb2 plays a crucial role in maintaining iron homeostasis in *Candida albicans*. *Submitted*.
96. F Daneshnia, L Cai, D Gunasekaran, I Gautam, A Perry, PM Ghahfarokhy, A Ebadati, J Munoz, D Padilla, S Hilmioglu-Polat, S Mei, DJ Floyd, MA Schikora-Tamarit, D Funes, M Artigués-Lleixà, LA. Walker, SM Gonçalves, M Salehi, A Carvalho, JV Desai, DS Perlin, CA Munro, A Hopke, T Wang, T Gabaldon, W Fang, CJ Nobile, MK Mansour, A Arastehfar. Profound cell wall remodeling in *Candida parapsilosis* during systemic infection confers simultaneous tolerance to echinocandin and host. ***Microbial. Spectr.*** *Revised*.
95. K Gary, H Edwards, A Doan, W Huso, J Lee, W Pan, N Bolima, I Gautam, T Wang, R Srivastava, M Zupan, M Marten, S Harris. The impact of fungal developmental structures on mechanical properties of mycelial materials. *Revised*.
94. Y Hu, S Yu, Z Ling, P Xiao, Y Zhu, G Miao, Y He, H Li, S Chen, T You, T Wang\*, F Xu\*, Molecular insights into cell wall architecture and xylan-bound cellulose fibrils in the wheat straw. *Under revision*. Available at BioRxiv. DOI: 10.1101/2025.03.11.642666

### ----- Independent contributions -----

93. I Gautam, A Ankur, K Singh, A Jacob, TL Doering, NAR Gow, JP Latge, T Wang. Breaking down the wall: solid-state NMR illuminates how fungi build and remodel diverse cell walls. ***PLOS Pathog.*** 21, e1013678 (2025). *Invited contribution*.

92. FA Davis, K Singh, JM Krampen, JA Bryant, KS Ost, SE Righi, MJ Balunas, T Wang, TR O'Meara. Bacterial metabolites induce cell wall remodeling, antifungal resistance, and immune recognition of commensal fungi. **Curr. Biol.** Accepted (2025) Available at BioRxiv. DOI: 10.1101/2025.07.26.666966
91. P Xiao, SA Pfaff, W Zhao, D Debnath, CJ Liu, DJ Cosgrove, T Wang. Emergence of lignin-carbohydrate interactions during plant stem maturation visualized by solid-state NMR. **Nat Commun** 16, 8010 (2025).
90. MCD Widanage, K Singh, J Li, JR Yarava, FJ Scott, Y Xu, NAR Gow, F Mentink-Vigier, P Wang, F Lamoth, T Wang. Distinct Echinocandin Responses of *Candida albicans* and *Candida auris* Cell Walls Revealed by Solid-State NMR. **Nat Commun** 16, 6295 (2025).
89. A Ankur, JR Yavara, I Gautam, FJ Scott, F Mentink-Vigier, C Chrissian, L Xie, D Roy, RE Stark, TL Doering, P Wang, T Wang. Polymorphic  $\alpha$ -glucans as structural scaffolds in *Cryptococcus* cell walls for chitin, capsule, and melanin: Insights from  $^{13}\text{C}$  and  $^1\text{H}$  solid-state NMR. **Angew Chem Int Ed**, 64, e202510409 (2025).
88. A Jacob, AH Willet, MG Igarashi, M Nokab, LA Turner, AK Alsanad, T Wang\*, KL Gould\*.  $\alpha$ -Glucan Remodeling by GH13-Domain Enzymes Shapes Fungal Cell Wall Architecture. **Proc Natl Acad Sci USA** 122, e2505509122 (2025).
87. D Debnath, P Sahu, M Nejad, Y Pu, JP Tessonier, A Ragauskas, L Qi, T Wang. Structure-guided utilization of lignocellulose for catalysis, energy, and biomaterials. **Cell Rep Phys Sci** 6, 102911 (2025) Invited contribution.
86. P Xiao, JR Yarava, D Debnath, P Sahu, Y Xu, L Xie, D Holmes, T Wang. Rapid high-resolution analysis of polysaccharide-lignin interactions in secondary plant cell walls using proton-detected solid-state NMR. **Anal Chem** 97, 18046-18054 (2025).
85. P Xiao, P Sahu, A Ankur, YK Ranasinghe, NAR Gow, JP Latge, DJ Cosgrove, T Wang. Revealing structure and shaping priorities in plant and fungal cell wall architecture via solid-state NMR. **Cell Surf** 14, 100159 (2025). *Invited contribution*.
84. JR Yarava, I Gautam, A Jacob, R Fu, T Wang. Proton-detected solid-state NMR for deciphering structural polymorphism and dynamic heterogeneity of cellular carbohydrates in pathogenic fungi. **J Am Chem Soc** 147, 17416-17432 (2025).
83. W Zhao, EC Thomas, D Debnath, F Scott, F Mentink-Vigier, JR White, RL Cook, T Wang. Enriched molecular view of saline wetland soil carbon by sensitivity-enhanced solid-state NMR. **J Am Chem Soc** 147, 519-531 (2025).
82. J Guan, HY Tse, H Wang, W Zhao, RD Patria, M Li, S Cheng, T Wang\*, SY Leu\*. Novel control of fractionation–depolymerization for rapid dissociation of lignin-associated xylan: toward complete lignocellulosic biomass valorization in lignin-first biorefinery. **Green Chem** 27, 13834-13848 (2025)
81. Y Nailwal, B Baker, Z Alsudairy, M Nokab, Q Zhang, T Wang, S Cai, Y Liu, X Li, Ambient mechanosynthesis of flexible two-dimensional covalent organic frameworks. **Green Chem** 27, 8848-8857 (2025)
80. M Siahkamari, D Debnath, T Wang\*, M Nejad\*. A fundamental study of lignin reactions with formaldehyde and glyoxal. **Green Chem** 27, 2342-2358 (2025)
79. K Singh, C Henry, I Mouyna, A Beauvais, Y Xu, A Karai, N. van Rhijn, JP Latge, T Wang. Kre6-dependent  $\beta$ -1,6-glucan biosynthesis only occurs in the conidium of *Aspergillus fumigatus*. **mSphere** 10, e00341-25 (2025)

78. Z Daikh, EA Zeitoun, T Fergoug, Y Bouhadda, K Sebakhy, K Derkaoui, K Bekki, A Kadiri, Y Chaker, E Mustapha; C Vojvodin, T Wang, A Elshewy, PV Steenberge. Synthesis of shape-controlled silica nanoparticles via dual soft templates: a comparative study between aqueous and microemulsion synthesis for the impregnation of procaine anesthesia drug. **Can. J. Chem. Eng.** (2025)
77. D Ruf; K Striegler; S Brazil; H Elsaman; K Singh; M Lepas; LD Fernando; V Brantl; P Heb; K Dichtl; V Aimanianda; T Wang, J Wagener. Rho2 regulates granulocyte-triggered stress adaptation and cell wall remodeling in *Aspergillus fumigatus*. **Microbiol Res** 299, 128238 (2025)
76. MK Kengwerere, JM Kenyaga, P Xiao, FJ Scott, X Wutoh-Hughes, J Wang, B Lum, Y Sun, F Mentink-Vigier, T Wang, W Qiang. Structural convergence and membrane interactions of A $\beta$ 1-42 along the primary nucleation process studied by solid state NMR. **Commun Chem** 8, 131 (2025)
75. PCA van der Wel, T Wang. Solid-state NMR and DNP of heterogeneous biomaterials and cellular systems. Editorial for the special issue. **Solid State Nucl Magn Reson** 137, 102003 (2025)
74. I Gautam, JR Yarava, Y Xu, R Li, FJ Scott, F Mentink-Vigier, M Momany, JP Latge, T Wang. Comparative analysis of polysaccharide and cell wall structure in *Aspergillus nidulans* and *Aspergillus fumigatus* by solid-state NMR. **Carbohydr Polym** 348, 122907 (2025).
73. T Javaid, A Venkataraghavan, M Bhattarai, D Debnath, W Zhao, T Wang, A Faik. A simple and highly efficient protocol for <sup>13</sup>C-labeling of plant cell wall for structural and quantitative analyses via solid-state nuclear magnetic resonance. **Plant Methods** 21, 5 (2025).
72. M Rafatt, MT Elrakai, MEHE Nokab, JE Sayed, A Elshewy, KO Sebakhy, N Moneib, T Wang\*, TJ Smith\*, MH Habib\*. Polymerization potential of a bacterial CotA-laccase for  $\beta$ -naphthol: enzyme structure and comprehensive polymer characterization. **Front Microbiol** 15, 1501112 (2024)
71. Q Cheng, MCD Widanage, JR Yarava, JP Latge, P Wang, T Wang. Molecular architecture of chitin and chitosan-dominated cell walls in zygomycetous fungal pathogens by solid-state NMR. **Nat Commun** 15, 8295 (2024).
70. MCD Widanage, I Gautam, D Sarkar, F Mentink-Vigier, JV Vermaas, SY Ding, AS Lipton, T Fontaine, JP Latge, P Wang, T Wang. Adaptive survival of *Aspergillus fumigatus* to echinocandins arises from cell wall remodeling beyond  $\beta$ -1,3-glucan synthesis inhibition. **Nat Commun** 15, 6382 (2024). *Editors' Highlights of the same journal in the area of microbiology and infectious diseases (best 50 papers). Highlighted by EurekaAlert, MSUToday, and National MagLab.*
69. K Gray, H Edwards, AG Doan, W Huso, J Lee, W Pan, N Bolima, ME Morse, S Yoda, I Gautam, SD Harris, M Zupan, T Wang, T deCarvalho, MR. Marten. *Aspergillus nidulans* cell wall integrity kinase, MpkA, impacts cellular phenotypes that alter mycelial-material mechanical properties. **Fungal Biol Biotechnol.** 11, 22 (2024).
68. M Xu, H Wang, C Vojvodin, JR Yarava, T Wang, W Xie. Polymorphism of Pb<sub>5</sub>(PO<sub>4</sub>)<sub>3</sub>OH $\delta$  within the LK-99 Mixture. **Acta Crystal** 80, 746-750 (2024).
67. A Poulhazan, A Arnold, F Mentink-Vigier, A Muszyński, P Azadi, A Halim, SY Vakhrushev, HJ Joshi, T Wang\*, DE Warschawski\* and I Marcotte\*. Molecular-level architecture of *Chlamydomonas reinhardtii*'s glycoprotein-rich cell wall. **Nat Commun** 15, 986 (2024).
66. M El Hariri El Nokab, JE Sayed, FD Witte, K Dewettinck, A Elshewy, Z Zhang, PHMV Steenberge, T Wang, KO Sebakhy. A comparative analytical study on the different water pools present in alginate hydrogels: qualitative vs. quantitative approaches. **Food Hydrocoll** 154, 110159 (2024)

65. I Gautam, K Singh, MCD Widanage, JR Yarava, [T Wang](#). New vision of cell wall in *Aspergillus fumigatus* from solid-state NMR spectroscopy. **J Fungi** 10, 219 (2024). [Invited for Aspergillus issue](#)
64. W Zhao, D Debnath, LD Fernando, I Gautam, [T Wang](#). Charting the solid-state NMR signals of polysaccharides: a database-driven roadmap. **Magn Reson Chem** 62, 298-309 (2024). [Invited for glycoNMR issue](#)
63. LD Fernando, Y Perez-Llano, MC Dickwella Widanage, A Jacob, L Martinez-Avila, AS Lipton, N Gunde-Cimerman, JP Latge, RAB Garcia, [T Wang](#). Structural adaptation of fungal cell wall in hypersaline environment. **Nat Commun** 14, 7082 (2023). [Highlighted by EurekAlert! and MSU NatSci](#)
62. W Qiang, M Kengwerere, W Zhao, F Scott, X Wutoh-Hughes, [T Wang](#), F Mentink-Vigier. Heterotypic interactions between the 40- and 42-residue isoforms of  $\beta$ -amyloid peptides on lipid bilayer surfaces. **ACS Chem Neurosci** 14, 4153-5162 (2023).
61. LD Fernando, W Zhao, I Gautam, A Ankur, [T Wang](#). Polysaccharide assemblies of fungal and plant cell walls explored by solid-state NMR. **Structure** 31, 1375-1385 (2023). [Invited for 30<sup>th</sup> anniversary issue](#)
60. N Ghassemi, A Poulhazan, D Fabien, F Mentink-Vigier, M Isabelle, [T Wang](#). Solid-state NMR investigations of extracellular matrices and cell walls of algae, bacteria, fungi, and plants. **Chem Rev** 122, 10036-10086 (2022). [Invited article. Supp cover. 162 citations](#)
59. A Kirui, W Zhao, H Yang, F Deligey, X Kang, F Mentink-Vigier, [T Wang](#). Carbohydrate-aromatic interface and molecular architecture of lignocellulose. **Nat Commun** 13, 538 (2022). [Editors' Highlights in the same journal in the area of structural biology, biochemistry and biophysics. Highlighted by EurekAlert and DOE Office of Science. 223 citations](#)
58. W Zhao, F Deligey, SC Shekar, F Mentink-Vigier, [T Wang](#). Current limitations of solid-state NMR in carbohydrate and cell wall research. **J Magn Reson** 341, 107263 (2022). [Invited article](#)
57. LD Fernando, MCD Widanage, SC Shekar, F Mentink-Vigier, P Wang, S Wi, [T Wang](#). Solid-state NMR analysis of unlabeled fungal cell walls from *Aspergillus* and *Candida* species. **J Struct Biol X** 6, 100070 (2022). [Invited article](#)
56. JP Latge, [T Wang](#). Modern biophysics redefines our understanding of fungal cell wall structure, complexity and dynamics. **mBio** 13, e01145-22 (2022).
55. F Deligey, M Frank, SH Cho, A Kirui, F Mentink-Vigier, M Swulius, BT Nixon, [T Wang](#). Structure of in-vitro synthesized cellulose fibrils viewed by cryo-electron tomography and  $^{13}\text{C}$  natural abundance dynamic nuclear polarization. **Biomacromolecules**, 23, 2290-2301 (2022). [Supp cover](#)
54. SC Shekar, W Zhao, LD Fernando, I Hung, [T Wang](#). A  $^{13}\text{C}$  three-dimensional DQ-SQ-SQ correlation experiment for high-resolution analysis of complex carbohydrates using solid-state NMR. **J Magn Reson** 336, 107148 (2022). [Invited article](#)
53. SC Shekar, W Zhao, TK Weldegiorghis, [T Wang](#). Effect of cross polarization radiofrequency phases on signal phases. **Solid State Nucl Magn Reson** 117, 101771 (2022)
52. Z Ling, W Tang, Y Su, C Huang, A Kirui, [T Wang](#), AD French, Q Yong. Stepwise allomorphic transformations by alkaline and ethylenediamine treatments on bamboo crystalline cellulose for enriched enzymatic digestibility. **Ind Crops Prod** 177, 114450 (2022)
51. A Poulhazan, MCD Widanage, A Arnold, W Dror, A Parastoo, M Isabelle, [T Wang](#). Identification and quantification of glycans in whole cells: architecture of microalgal polysaccharides described by solid-state NMR. **J Am Chem Soc** 143, 46, 19374-19388 (2021). [Front cover](#)



50. A Chakraborty, LD Fernando, W Fang, MC, Dickwella Widanage, P Wei, C Jin, T Fontaine, J-P Latge, T Wang. A molecular vision of fungal cell wall organization by functional genomics and solid-state NMR. **Nat Commun** 12, 6346 (2021). [Highlighted by EurekAlert! and National MagLab. 134 citations](#)
49. LD Fernando, MCD Widanage, J Penfield, AS Lipton, N Washton, J-P Latge, P Wang, L Zhang, T Wang. Structural polymorphism of chitin and chitosan in fungal cell walls from solid-state NMR and principal component analysis. **Front Mol Biosci** 8, 727053 (2021). [Invited article. 112 citations](#)
48. A Kirui, J Du, W Zhao, W Barnes, X Kang, C. Anderson, C Xiao, T Wang. A pectin methyltransferase modulates polysaccharide dynamics and interactions in Arabidopsis primary cell walls: evidence from solid-state NMR, **Carbohydr Polym** 270, 118370 (2021)
47. W Zhao, A Kirui, F Deligey, F Mentink-Vigier, Y Zhou, B Zhang, T Wang. Solid-state NMR of unlabeled plant cell walls: high-resolution structural analysis without isotopic enrichment. **Biotechnol Biofuels** 14,14 (2021)
46. L Wilson, F Deligey, T Wang, DJ Cosgrove. Saccharide analysis of onion outer epidermal walls. **Biotechnol Biofuels** 14: 66 (2021)
45. J Du, A Kirui, S Huang, L Wang, W Barnes, S Kiemle, Y Zheng, Y Rui, S Qi, SH Kim, T Wang, DJ Cosgrove, C Xiao, C Anderson. Mutations in the pectin methyltransferase QUASIMODO2 influence cellulose biosynthesis and wall integrity in Arabidopsis thaliana. **Plant Cell** 32, 3576-3597 (2020)
44. LD Fernando, W Zhao, MCD Widanage, F Mentink-Vigier, T Wang. Solid-state NMR and DNP investigations of carbohydrates and cell wall biomaterials. **eMagRes** 9, 251-259 (2020). [Invited article](#)
43. W Zhao, LD Fernando, A Kirui, F Deligey, T Wang. Solid-state NMR of plant and fungal cell walls: a critical review. **Solid State Nucl Magn Reson** 101660 (2020). [Invited article. 93 citations](#)
42. A Chakraborty, F Deligey, J Quach, F Mentink-Vigier, P Wang, T Wang. Biomolecular complex viewed by dynamic nuclear polarization solid-state NMR spectroscopy. **Biochem Soc Trans** 48, 1089-1099 (2020). [Invited article](#)
41. B Addison, D Stengel, V Bharadwaj, R Happs, C Doeppke, G Holland, T Wang, Y Bomble, A Harman-Ware. Selective one-dimensional  $^{13}\text{C}$ – $^{13}\text{C}$  spin-diffusion solid-state nuclear magnetic resonance methods to probe spatial arrangements in biopolymers including plant cell walls, peptides, and spider silk. **J Phys Chem B** 124, 44, 9870-9883 (2020). [Front cover](#)
40. M Liu, Z Zhang, C Ding, T Wang, BL Kelly, P Wang. Transcriptomic analysis of extracellular RNA governed by the endocytic adaptor protein Cin1 of Cryptococcus deneoformans. **Front Cell Infect Microbiol** 10:256 (2020)
39. X Kang, W Zhao, MCD Widanage, A Kirui, U Ozdenvar, T Wang. CCMRD: A solid-state NMR database for complex carbohydrates. **J Biomol NMR** 74, 239-245 (2020)
38. X Kang, C Elson, J Penfield, A Kirui, A Chen, L Zhang, T Wang. Structure and dynamics of human  $\beta$ -defensin analog in lipid bilayers from molecular dynamics and solid-state NMR. **Commun Biol** 2: 402 (2019)
37. X Kang, A Kirui, MCD Widanage, F Mentink-Vigier, DJ Cosgrove, T Wang. Lignin-polysaccharide interactions in plant secondary cell walls revealed by solid-state NMR. **Nat Commun** 10, 347 (2019). [Highlighted by Science Daily, EurekAlert! and National MagLab. 575 citations](#)
36. A Kirui, Z Ling, X Kang, MCD Widanage, AD French, T Wang. Atomic resolution of cotton cellulose structure enabled by DNP solid-state NMR. **Cellulose** 26, 329-39 (2019)

35. Z Ling, T Wang, M Makarem, MS Cintron, HN Cheng, X Kang, M Bacher, A Potthast, T Rosenau, H King, CD, Delhom, S Nam, JV Edwards, SH Kim, F Xu, AD French. Effects of ball milling on the structure of cotton cellulose. **Cellulose** 26, 305-328 (2019). [375 citations](#)
34. A Kirui, MCD Widanage, F Mentink-Vigier, P Wang, X Kang, T Wang. Preparation of fungal and plant materials for structural elucidation using dynamic nuclear polarization solid-state NMR, **J Vis Exp** 144, e59152 (2019)
33. L Zhang, C Gao, L Tang, D Zhang, S Wang, S Cao, F Mentink-Vigier, Z Xu, X Liu, T Wang, Y Zhou, B Zhang. Arabinosyl deacetylase modulates arabinoxylan acetylation profile and secondary wall formation. **Plant Cell** 31, 1113–26 (2019)
32. X Kang, A Kirui, A Muszyński, MCD Widanage, A Chen, P Azadi, P Wang, F Mentink-Vigier, T Wang. Molecular architecture of fungal cell walls revealed by solid-state NMR, **Nat Commun** 9, 2747 (2018). [Highlighted by Science Daily, Phys.org and EurekAlert! 364 citations](#)

----- Publications before independence -----

31. M Roos, T Wang, A Shcherbakov, M Hong. Fast magic-angle-spinning  $^{19}\text{F}$  spin exchange NMR for determining nanometer  $^{19}\text{F}$ – $^{19}\text{F}$  distances in proteins and pharmaceutical compounds. **J Phys Chem B** 122, 2900-11 (2018)
30. P Phyto, T Wang, Y Yu, H O'Neill, M Hong. Direct determination of hydroxymethyl conformations of plant cell wall cellulose using  $^1\text{H}$  polarization transfer solid-state NMR. **Biomacromolecules** 19, 1485–97 (2018)
29. H Yang, T Wang, D Oehme, L Petridis, M Hong, JD Kubicki. Structural factors affecting  $^{13}\text{C}$  NMR chemical shifts of cellulose: a computational study. **Cellulose** 25, 23-36 (2018)
28. P Phyto<sup>#</sup>, T Wang<sup>#</sup>, SN Kiemle<sup>#</sup>, H O'Neill, SV Pingali, M Hong, DJ Cosgrove. Gradients in wall mechanics and polysaccharides along growing Arabidopsis inflorescence stems. **Plant Physiol** 175, 1579-92 (2017). <sup>#Equal contribution.</sup> [99 citations](#)
27. P Phyto, T Wang, C Xiao, C Anderson, M Hong. Effects of pectin molecular-weight changes on the structure, dynamics and polysaccharide interactions of primary cell walls of Arabidopsis thaliana: insights from solid-state NMR. **Biomacromolecules** 18, 2937-50 (2017)
26. M Gelenter, T Wang, S Liao, H O'Neil, M Hong.  $^2\text{H}$ - $^{13}\text{C}$  correlation solid-state NMR for investigating dynamics and water accessibilities of proteins and carbohydrates. **J Biomol NMR** 68, 257-70 (2017)
25. T Wang, Y Chen, DJ Cosgrove and M Hong. The target of  $\beta$ -expansin EXPB1 in maize cell walls from binding and solid-state NMR. **Plant Physiol** 172, 2107-2119 (2017)
24. T Wang, H Jo, WF DeGrado, M Hong. Water distribution, dynamics and interactions with Alzheimer's  $\beta$ -amyloid fibrils investigated by solid-state NMR. **J Am Chem Soc** 139, 6242-6252 (2017). [103 citations](#)
23. M Lee, T Wang, O Makhlynets, Y Wu, N Polizzi, H Wu, P Gosavi, I Korendovych, WF DeGrado, M Hong. Zinc-binding structure of a catalytic amyloid from solid-state NMR spectroscopy. **Proc Natl Acad Sci USA** 114, 6191-96 (2017). [121 citations](#)
22. T Wang and M Hong. Structure and dynamics of polysaccharides in plant cell walls from solid-state NMR. **NMR in Glycoscience and Glycotechnology**, Chapter 13, 290-304 (2017). [Invited](#)
21. T Wang and M Hong. Solid-state NMR investigations of cellulose structure and interactions with matrix polysaccharides in plant primary cell walls. **J Exp Bot** 67, 503-14 (2016). [242 citations](#)



20. M Elkins<sup>#</sup>, T Wang<sup>#</sup>, M Nick, H Jo, T Lemmin, Y Wu, SB Prusiner, WF DeGrado, J Stöher and M Hong. Structural polymorphism of Alzheimer's  $\beta$ -amyloid fibrils as controlled by an E22 switch: a solid-state NMR study. **J Am Chem Soc** 138, 9840-52 (2016). <sup>#</sup>*Equal contribution*. [101 citations](#)
19. T Wang, H Yang, JD Kubicki and M Hong. Cellulose structural polymorphism in plant primary cell walls investigated by high-field 2D solid-state NMR spectroscopy and density functional theory calculations. **Biomacromolecules** 17, 2210-22 (2016). [143 citations](#)
18. T Wang, P Phyto and M Hong. Multidimensional solid-state NMR spectroscopy of plant cell walls. **Solid State Nucl Magn Reson** 78, 56-63 (2016). *Invited*.
17. SY Liao, M Lee, T Wang, I Sergeyev and M Hong. Efficient DNP NMR of membrane proteins: sample preparation protocols, sensitivity, and radical location. **J Biomol NMR** 64, 223-37 (2016)
16. T Wang, Y Park, DJ Cosgrove, M Hong. Cellulose-pectin contacts are inherent to never-dried Arabidopsis primary cell walls: evidence from solid-state NMR. **Plant Physiol** 168, 871-884 (2015) [266 citations](#)
15. T Wang and M Hong. Investigation of the curvature generation and membrane localization of the influenza virus M2 protein using static and off-magic-angle spinning solid-state NMR spectroscopy of oriented bicelles. **Biochemistry** 54, 2214-26 (2015)
14. T Wang, JK Williams, K Schmidt-Rohr, M Hong. Relaxation-compensated difference spin diffusion NMR for detecting  $^{13}\text{C}$ - $^{13}\text{C}$  correlations in proteins and polysaccharides. **J Biomol NMR** 61, 97-107 (2015).
13. NH Joh, T Wang, MP Bhate, R Acharya, Y Wu, M Grabe, M Hong, G Grigoryan, WF DeGrado. De Novo Design of a Transmembrane  $\text{Zn}^{2+}$  Transporting Four-Helix Bundle. **Science** 346, 1520-24 (2014). *Featured in Science, Nat Chem, C&EN, EurekAlert, and F1000*. [350 citations](#)
12. T Wang, A Salazar, O Zabolina, M Hong. Structure and dynamics of Brachypodium primary cell walls polysaccharides from 2D  $^{13}\text{C}$  NMR spectroscopy. **Biochemistry** 53, 2840-54 (2014). [93 citations](#)
11. PB White<sup>#</sup>, T Wang<sup>#</sup>, YB Park, DJ Cosgrove, M Hong. Water-polysaccharide interactions in the primary cell wall of Arabidopsis thaliana from polarization transfer solid-state NMR. **J Am Chem Soc** 136, 10399-409 (2014). <sup>#</sup>*Equal contribution*. [160 citations](#)
10. T Wang, Y Park, M Caporini, M Rosay, L Zhong, DJ Cosgrove, M Hong. Sensitivity-enhanced solid-state NMR detection of expansin's target in plant cell walls. **Proc Natl Acad Sci USA** 110, 16444-49 (2013) [253 citations](#)
9. T Wang, H Yao, M Hong. Determining the depth of insertion of dynamically invisible membrane peptides by gel-phase  $^1\text{H}$  spin diffusion heteronuclear correlation NMR. **J Biomol NMR** 56, 139-48 (2013)
8. T Wang, O Zabolina, M Hong (2012). Pectin-cellulose and protein-polysaccharide interactions in Arabidopsis primary cell walls by 2D MAS NMR. **Biochemistry** 51, 9846-56. [193 citations](#)
7. T Wang, L Widanapathirana, Y Zhao, M Hong. Aggregation and dynamics of oligocholate transporters in phospholipid bilayers revealed by solid-state NMR spectroscopy. **Langmuir** 149, 17071-78 (2012)
6. T Wang, SD Cady, M Hong. NMR determination of protein partitioning into membrane domains with different curvatures. **Biophys J** 102, 787-94 (2012).
5. D Harris, K Corbin, T Wang, R Gutierrez, A Bertolo, C Petti, D Smilgies, J Estevez, D Bonetta, B Urbanowicz, D Ehrhardt, C Somerville, J Rose, M Hong, S DeBolt. Cellulose microfibril crystallinity is reduced by mutating C-terminal transmembrane region residues CESA1<sup>A903V</sup> and CESA3T<sup>942I</sup> of cellulose synthase. **Proc Natl Acad Sci USA** 109, 4098-4103 (2012). [205 citations](#)

4. M Dick-Perez, T Wang, A Salazar, O Zabolina, M Hong. Multidimensional solid-state NMR studies of pectin structure and dynamics in  $^{13}\text{C}$ -Arabidopsis cell walls. **Magn Reson Chem** 50, 539-50 (2012)
3. SD Cady, T Wang, M Hong. Membrane-dependent effects of a cytoplasmic helix on the structure and drug binding of the influenza M2 protein. **J Am Chem Soc** 133, 11572-79 (2011). [104 citations](#)
2. J Wang, C Ma, G Fiorin, V Carnevale, T Wang, F Hu, RA Lamb, ML Klein, LH Pinto, M Hong. WF DeGrado, Molecular dynamics simulation directed rational design of inhibitors targeting drug-resistant mutants of influenza A virus M2. **J Am Chem Soc** 133, 12834-41 (2011)
1. Y Liu, J Zhou, X Zhan, Z Liu, X Wan, J Tian, T Wang, Y Chen. Synthesis, characterization and optical limiting property of oligothiophene-functionalize graphene. **Carbon** 47, 3113-21 (2009)

## TALKS & SEMINARS

78. GRC Lignin, Lucca, Italy (May 17-22). **Invited.**
77. GRC Fungal Cell and Molecular Biology, Holderness, NH (June 23, 2026). **Invited**
76. Fungal Genetics Conference, Pacific Grove, CA (March 17-22, 2025). **Invited**
75. PacificChem, Advances in Glycan Structure and Dynamics (Dec 16, 2025). **Invited**
74. MycoTalks Season 6, Virtual seminar at Medical Research Council Centre for Medical Mycology, University of Exeter (Sept 25, 2025). **Invited**
73. International Flavors & Fragrances (Sept 23, 2025). **Invited**
72. 21<sup>st</sup> EUROMAR, Oulu, Finland (July 6, 2025). **Award lecture**
71. 40th Biennial Meeting of the Spanish Royal Society of Chemistry, (July 2, 2025), Bilbao, Spain Symposium: Chemical Biology and Carbohydrates in Molecular Recognition. **Invited**
70. Canadian Society for Chemistry Conference and Exhibition. Symposium: Advances in Magnetic Resonance, Ottawa, Canada (June 15-19, 2025). **Invited**
69. 67th International Conference on Analytical Sciences and Spectroscopy (ICASS), Kingston, Canada (May 27-29, 2025). **Keynote**
68. International Society for Human and Animal Mycology (ISHAM) 2025, Iguaçu Falls-Brazil (May 20-24, 2025). **Invited**
67. 9th Gateway NMR Symposium, Columbus, OH (May 15-16, 2025) **Invited**
66. Joint conference of 66<sup>th</sup> ENC and 24<sup>th</sup> ISMAR, Pacific Grove, CA (April 6-10, 2025). **Invited**
65. Spring 2025 ACS National Meeting, CARB Award Symposium, San Diego, CA (March 23-27, 2025). **Award Lecture**
64. IVAN NMR Research Workshops, Breaking Investigative Barriers with DNP: Targeting Solids in Biological and Engineered Materials. Virtual workshop series (Dec 5, 2024). **Invited**
63. DOE Physical Biosciences PI meeting, Gaithersburg, Maryland (Oct 21, 2024)
62. MIT, Physical Chemistry Seminar, Department of Chemistry (Oct 8, 2024). **Invited**
61. 20<sup>th</sup> European Magnetic Resonance Congress (EUROMAR), Bilbao, Spain (July 2, 2024). **Plenary**
60. GlycoNMR Summit, virtual, hosted by Complex Carbohydrate Research Center (Dec 6, 2023). **Invited**
59. University of Hawaii, Department of Molecular Biosciences & BioEngineering, Honolulu, HI (Oct 17, 2023). **Invited**
58. Washington Area NMR and Imaging group, Institute for Bioscience and Biotechnology Research, Rockville, MD (Aug 25, 2023). **Invited**
57. ACS National Meeting Fall 2023. Symposium: NMR and MRI for Materials Characterizations. PHYS division (Aug 15, 2023) San Francisco, CA. **Invited**
56. 21<sup>st</sup> International Symposium on Wood Fiber and Pulp Chemistry (ISWFPC), Venice, Italy (July 5, 2023). **Keynote**
57. 64<sup>th</sup> ENC (Experimental NMR Conference), Pacific Gove, CA (April 19, 2023). **Award Lecture**

55. ACS National Meeting Spring 2023. CARB & CELL divisions. Symposium: Transforming Glycoscience: Where Do we stand? (March 27). Indianapolis, IN. **Invited**
54. University of Nebraska-Lincoln, Department of Chemistry, Lincoln, NE 68508 (Feb 10, 2023). **Invited**
53. 50<sup>th</sup> SouthEast Magnetic Resonance Conference (SEMRC), Tallahassee, FL (Nov 5, 2022). **Invited**
52. Biennial ORNL Soft Matter Symposium, Oak Ridge National Laboratory, Oak Ridge, TN (Oct 28, 2022). **Invited**
51. The 29th International Council on Magnetic Resonance in Biological Systems (ICMRBS), Boston, MA (Aug 21-25, 2022). **Invited**
50. Gordon Research Conference on Lignin, Easton, MA (Aug 3, 2022). **Invited**
49. GlycoNMR Summit, University of Georgia (May 26, 2022). *Virtual Invited*. **Invited**
48. Rutgers University, Department of Chemistry and Biochemistry (April 19, 2022). *Virtual*. **Invited**
47. Global NMR Discussion Meeting series (Feb 22, 2022) *Virtual*. **Invited**
46. Complex Carbohydrate Research Center, University of Georgia (Feb 1, 2022). *Virtual*. **Invited**
45. Purdue University, Department of Chemistry, Analytical Chemistry Division (Jan 13, 2022). **Invited**.
44. Michigan State University, Department of Chemistry (Jan 7, 2022). *Virtual*. **Invited**
43. Mississippi State University, Department of Chemistry (Nov 5, 2021). **Invited**
42. Tulane University, Department of Chemistry (Nov 1, 2021). **Invited**
41. Iowa State University, Department of Chemistry (Oct 1, 2021). **Invited**
40. City College of New York, CUNY Advanced Science Research Center (Sept 29, 2021). *Virtual*. **Invited**
39. Washington University in St. Louis, Department of Energy, Environmental & Chemical Engineering (Sept 10, 2021). **Invited**
38. 22nd International Society of Magnetic Resonance Conference (Aug 22, 2021). *Virtual*. **Award Lecture**
37. ACS Spring 2021, CARB, Carbohydrates and Infectious Disease, (April 7, 2021). *Virtual*. **Invited**
36. 7th Biennial Physical Biosciences Research Meeting, DOE (Sept 14, 2020). *Virtual*. **Invited**
35. Emerging Topics in Bimolecular Magnetic Resonance (Lecture series) (June 18, 2020). *Virtual*. **Invited**
34. University of New Orleans, Chemistry (Mar 6, 2020). **Invited**
33. Syracuse University, Department of Chemistry (Feb 8, 2020). **Invited**
32. Binghamton University, Chemistry (Nov 22, 2019). **Invited**
31. Soochow University, China (Nov 8, 2019). **Invited**
30. Institute of Physics and Mathematics, Chinese Academy of Sciences (Nov 7, 2019). **Invited**
29. Huazhong Agricultural University, China (Nov 5, 2019). **Invited**
28. 48<sup>th</sup> Southeast Magnetic Resonance Conference, Gainesville, FL (Oct 26, 2019). **Invited**
27. Alpine Conference on Magnetic Resonance in Solids, Chamonix-Mont-Blanc, France (Sept 16, 2019).
26. 60th ENC, Pacific Grove, CA (April 10, 2019).
25. Ultrahigh Field NMR workshop, 60th ENC, Pacific Grove, CA (April 9, 2019). **Invited**
24. 257th ACS, CELL, Symposium: Understanding Cellulose Crystallinity and Non-crystalline Aggregated States of Cellulose (April 2, 2019). **Invited**
23. 257th ACS, CELL, Symposium: Interplay of cellulose and other biopolymers in biological and designed materials systems (April 1, 2019). **Invited**
22. University of Wisconsin Madison, Department of Biochemistry (Jan 17, 2019). **Invited**
21. Symposium of LSU Biomedical Collaborative Research, New Orleans, LA (Oct 1, 2018). **Invited**
20. The 28th International Council on Magnetic Resonance in Biological Systems (ICMRBS), Dublin, Ireland (Aug 22, 2018). **Invited**
19. National High Magnetic Field Laboratory, Tallahassee, FL (Aug 13, 2018). **Invited**

18. The 59th Rocky Mountain Conference on Magnetic Resonance, Snowbird, UT (July 26, 2018).
17. The 8th Cell Wall Research Conference (previously a GRC), Asilomar, CA (June 18, 2018).
16. Nicholls State University (*\*PUJ*), Department of Chem and Phys Sci (Mar 08, 2018). **Invited**
15. The 24th NMRS conference, IISER-Mohali, India (Feb 16, 2018). **Invited**
14. North Carolina A&T University (*\*HBCU*), Department of Chemistry (Nov 16, 2017). **Invited**
13. 17th Beijing Conference and Exhibition on Instrumental Analysis, China (Oct 11, 2017). **Keynote**
12. Institute of Genetics and Development Biology, Beijing, China (Oct 10, 2017). **Invited**
11. Louisiana State University, Biological Sciences, Plant biology groups (July 21, 2017)
10. 253rd ACS meeting, Frontiers in Glycoanalytics, San Francisco, CA (Apr 4, 2017). **Invited**
9. NIH P41 advisory meeting, Francis Bitter Magnet Laboratory, MIT, Cambridge, MA (July 30, 2016)
8. Louisiana State University, Department of Chemistry, Baton Rouge, LA (Jan 8, 2016)
7. MIT, Chemistry Student Seminar, Cambridge, MA (June 15, 2015)
6. Penn State University, Center for Lignocellulose Structure and Formation (June 01, 2015).
5. 56th ENC, OCMRS meeting, Asilomar, CA (Apr 22, 2015)
4. 26th International Council on Magnetic Resonance in Biological Systems, Dallas, TX (Aug 29, 2014).
3. Center for Lignocellulose Structure & Formation all-hands meeting (May 16, 2014)
2. Gordon Research Conference, Plant Cell Walls, Waterville, ME (Aug 09, 2012). **Invited**
1. Iowa State University, Department of Chemistry, Ames, IA (Mar 30, 2012)

## TALKS BY STUDENTS AND POSTDOCS

- Ankur Ankur, 2025 Midwest Carbohydrate and Glycobiology Symposium, Toledo, OH (Sept 21, 2025).
- Peng Xiao, International Conference on Plant Cell Wall Biology, Vancouver, Canada (July 6-10, 2025).
- Jayasubba Yarava, Chicago Area NMR Discussion Group Annual Meeting, East Lansing, MI (Oct 5, 2024)
- Ankur Ankur, Chicago Area NMR Discussion Group Annual Meeting, North Chicago, IL (Sept 23, 2023)
- Debkumar Debnath, Wood-Based Composite Center (WBC) meeting, East Lansing, MI, (Sep 27, 2023)
- Wancheng Zhao, 62<sup>nd</sup> Annual Meeting of Phytochemical Society of North America (PSNA), East Lansing, MI (July 18, 2023)
- Isha Gautam, ACS Central Regional meeting (CERM), Dearborn, MI (June 23, 2023)
- Liyanage Fernando, 64<sup>th</sup> ENC, Pacific Grove, CA (April 19, 2023)
- Wancheng Zhao, CELL Division, ACS National Meeting Spring 2023, Indianapolis, IN (March 29, 2023)
- Wancheng Zhao, PHYS Division, ACS National Meeting Spring 2023, Indianapolis, IN (March 30, 2023)
- Liyanage Fernando, American Society of Molecular Biology and Biochemistry Annual Meeting, Seattle, WA (Mar 26, 2023)
- Isha Gautam, Chicago Area NMR Discussion Group Annual Meeting, Chicago, IL (Nov 5, 2022)
- Wancheng Zhao, 61<sup>st</sup> Annual Rocky Mountain Conference on Magnetic Resonance, Solid-state NMR Symposium, Copper Mountain, CO (July 25-29, 2022).
- Wancheng Zhao, 63<sup>rd</sup> Experimental Nuclear Magnetic Resonance Conference, Orlando, FL (Apr 27, 2022)
- Alex Kirui, 49<sup>th</sup> SouthEast Magnetic Resonance Conference (SEMRC), Baton Rouge, LA (Oct 23, 2021)
- Alex Kirui, 48<sup>th</sup> SouthEast Magnetic Resonance Conference (SEMRC), Gainesville, FL (Oct 26, 2019)

## GROUP MEMBERS

- |   |                    |
|---|--------------------|
| • Dr. Jayasubba Reddy Yarava, postdoc associate   | March 2023-present |
| • Dr. Peng Xiao, postdoc associate                | Jan 2024-present   |
| • Dr. Cameron Vojvodin, postdoc associate         | Jan 2024-present   |
| • Dr. Mustapha El Hariri Nokob, postdoc associate | Jan 2024-present   |

• Isha Gautam, graduate student	Jan 2022-present
• Kalpana Singh, graduate student	Dec 2022-present
• Yohara Ranasinghe, graduate student	Dec 2024-present
• Anand Jacob, graduate student	Dec 2022-present
• Priya Sahu, graduate student	Oct 2023-present
• Debkumar Debnath, graduate student	Dec 2022-present
• Ankur Ankur, graduate student	Dec 2022-present
• Yifan Xu, graduate student	July 2024-present
• Mahsa Doosti, graduate student	May 2025-present
• Abdul Alsanad, master student	July 2025-present
• Aswath Karai, undergraduate researcher	Aug 2023-present
• Jack Marsh, undergraduate researcher	Aug 2025-present
• Dylan Dinkins, undergraduate researcher	Aug 2025-present

## ALUMNI

- Dr. Wancheng Zhao, PhD student (April 2019-Dec 2023)  
Current: Postdoc associate in Dr. Robert Tycko's group at NIH
- Dr. Alex Kirui, PhD student (Aug 2017-Feb 2022)  
Current: R&D Engineer, Intel
- Dr. Malitha Dickwella Widanage, PhD student (Jan 2018-Dec 2022)  
Current: Postdoc associate, National Renewable Energy Laboratory
- Dr. Liyanage Fernando, PhD student (Dec 2018-July 2023)  
Current: Postdoc associate, Complex Carbohydrate Research Center (CCRC)
- Dr. Fabien Deligey, postdoc associate (Jan 2020-June 2022)  
Current: Client Support & Training Engineer, Bruker, Wissembourg, France
- Dr. Xue Kang, postdoc associate (Oct 2017-Aug 2019)  
Current: Principal Investigator, Ningbo University, China
- Dr. Nader Ghassemi, postdoc associate (Sept 2020-Dec 2021)  
Current: Research Associate Scientist, Sidney Kimmel Cancer Center, Jefferson Hospital
- Dr. Qinghui Cheng, postdoc associate (Aug 2022- July 2024)  
Current: Associate Professor/Associate Investigator, Guangxi Academy of Sciences
- Dr. S. Chandra Shekar, postdoc associate (March 2020-June 2022)  
Current: Postdoc Associate, Harvard University
- Dr. Krishna Bankala, postdoc associate (July 2023-June 2024)  
Current: Senior Resident, All India Institute of Medical Science
- Arnab Chakraborty, MS student (Dec 2018- August 2021)  
Current: Associate Scientist, Pharmaceutical Product Development (PPD) Inc.
- Visiting scholars (5): Alexandre Poulhazan (March-Aug 2020), Liliana Martínez (Nov 2019-May 2020), Irina Jimenez Gomez (March 2022-Feb 2023), Jiangyu Guan (June- Dec, 2023), Lejun Wang (June 2024-May 2025)
- Undergraduate researchers (15): Jack Marsh, Aswath Karai<sup>#</sup>, Dibakar Roy<sup>#</sup>, Abdul Alsanad<sup>#</sup>, Adrian Chen<sup>##</sup>, Brooke Badeaux, Uluc Ozdenvar<sup>#</sup>, Kayla Bougere, Joshua Toche, Cassie C Louque, Sean Wood, Matthew Burton, Jenny Quach<sup>#</sup>, Kieran Doran, Anna Nguyen, Tatum Beckemeyer (<sup>#</sup> with publications)
- High school student: Reina Li<sup>#</sup> (<sup>#</sup> with publication)

## PROFESSIONAL SERVICE

- **User advisory committee:** National High Magnetic Field Laboratory, Jan 2022-Dec 2024



- **Host** of 2024 CANMRDG Annual Conference, MSU, East Lansing, Oct 5, 2024
- **Organization committee** of Chicago Area NMR Discussion Group (CANMRDG) conference, 2023-2025
- **Organizer** of 49th SouthEast Magnetic Resonance Conference (SEMRC, ~110 attendees), Oct 22-24, 2021
- **Outreach Programs:**  
 Faculty mentor for High School Honors Science, Math and Engineering Program (2024-present): seven-week summer research for students across the U.S. who are entering 12<sup>th</sup> grade.  
 Upward Bound Program (2018; 2020): chemistry lectures for 10th-12th graders.  
 ChemDemo (2018): sent out students to K-12 schools to conduct demonstrative experiments.  
 Super Science Saturday (2017): demo experiments to 1,100 K-12 students and 1,200 parents.
- **Committee member:** MSU CEM instrument committee (2022-present); MSU CEM graduate admission committee (FS2024); Gen Chem Lab Specialist Search Committee (2024-2025).
- **Committee member:** LSU chemistry faculty committees: alumni and newsletter (Chair, 2019-2022), Faculty hiring committee; Neutron/Biochemistry (2019), graduate admission (2017-2022), facility (2019-2022), social media (2019-2022), chemistry major task force (2017-2019)
- **Reviewer for 93 journals** (269 papers), such as *Science*; *Sci Adv*; *Nat Struc Mol Biol*; *Nat Commun*; *Nat Plants*; *Nat Rev Microbiol*; *Chem Rev*; *Chem Soc Rev*; *J Am Chem Soc*; *Adv Sci*; *Chem Commun*; *Nanoscale*; *Plant Physiol*; *ACS Appl Mater Interfaces*; *Anal Chem*; *J Phys Chem*; *Carbohydr Polym*; *PLOS Biol*; *Magn Reson Lett*; *J Biomol NMR*; *Biomol NMR Assign*; *Chem Mater*; *ACS Sustain Chem Eng*; *ACS Appl Nano Mater*; *ACS Chem Neurosci*; *ACS Infect Dis*; *Anal Chem*; *Chem Phys Lett*; *Fungal Genet Biol*; *BBA-Biomembranes*; *Cellulose*; *Sci Data*; *Solid State Nucl Magn Reson*; *Front Plant Sci*; *New Phytol*; *Mol Plant*; *Chem Mater*; *Magn Reson Chem*, etc.
- **Guest Editor:** *Solid State Nucl Magn Reson*; special issue on heterogeneous biomaterials and cellular systems, 2024
- **Guest Editor:** *Curr Opin Microbiol*; special issue on host-microbe interactions of fungi, 2025-2027
- **Reviewer for funding agencies** (18 programs):  
 NIH AIRT study section, panel member, Feb and June 2024, and April, June, and Oct 2025  
 DOE BES Physical Biosciences and Photosynthetic Systems Program, ad-hoc, 2021, 2022, 2025  
 NSF-MCB, panel member, 2025  
 NSF-DBI, ad-hoc, 2025  
 UK Research and Innovation (UKRI), ad-hoc, 2024  
 DOE BER Bioimaging for Bioeconomy & Environment, review panel, 2024  
 Swiss National Science Foundation (SNSF), ad-hoc, 2024  
 NIH ZRG1 F07C-S (20) study section, panel member, 2023  
 DOE Energy Earthshot Initiative, ad-hoc, 2023  
 NSF Mid-scale Research Infrastructure-2, ad-hoc, 2023  
 Israel Science Foundation, ad-hoc, 2022 & 2023  
 Austrian Science Fund, ad-hoc, 2022  
 NIH S10 202301 ZRG1 MBBC-V(30)I study section, panel member, 2022  
 European Research Council (ERC), ad-hoc, 2021  
 NIH BBM study section, panel member, 2020  
 Ralph E. Powe Junior Faculty Enhancement Award, ad-hoc, 2020  
 French National Research Agency (ANR), ad-hoc, 2020  
 ACS Petroleum Research Fund, ad-hoc, 2019, 2020