# Tuo Wang

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## 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

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|---|---|
| 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

2027 WISE Professorship, Stockholm University and KTH (Knut and Alice Wallenberg Foundation)
2026 Founders' Medal, International Council on Magnetic Resonance in Biological Systems (ICMRBS)
2025 AMPERE Prize for Young Investigators in Magnetic Resonance
2025 Horace S. Isbell Award, ACS Carbohydrate Division
2023 Varian Young Investigator Award in Magnetic Resonance
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); implementing software to enable megadata analysis of polysaccharide structure in biomaterials

## RESEARCH EXPERIENCE

- Investigated the polymorphic structure of Alzheimer's β-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; 13 semesters; total enrollment of 742 students; 3 credit hrs per course

- CEM 987-002, Advanced NMR Theory and Applications — Fall 2026
  Enrollment: 7
- CEM 484, Molecular Thermodynamics — Spring 2026
  Enrollment: **108** No numeric evaluation at MSU
- CEM 484, Molecular Thermodynamics — Spring 2025
  Enrollment: **107** No numeric evaluation
- 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 ($10,890,924 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, $1,125,000, 6/15/2023-6/14/2029
  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 $^{1}$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, S10OD040062, $1,811,603, 06/01/2025-05/31/2027.
  Modernization of a 600 MHz NMR spectrometer with solid-state cryoprobe for structural analysis of macromolecular and cellular 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
- **NIH S10**, PI, S10OD038174, $378,171, 04/2025-4/2026. Ultrafast magic-angle spinning probe for $^{1}H$ detection solid-state NMR to advance structural analysis of macromolecular assemblies
- **USDA-NIFA**, co-PI, 2026-67039-45934, $282,327 (T. Wang's portion), 02/01/2026-01/31/2030
  Novel antifungal symbiotic NCR peptides: Modes of action and control of fungal pathogens
- **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 $^{13}C$-$^{13}C$ 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** ($373,498 for T Wang): NIH-NIGMS, subcontract, $130,296 for T Wang, R01GM125853, 09/2024-08/2026, PI: Wei Qiang. NIH-NIGMS, subcontract, $113,242 to T Wang, R15GM163254, 05/01/2026-04/30/2029, PI: Liqun Zhang. LBCRP, PI, $60,050 (07/2018-06/2019); WISE professorship, Knut and Alice Wallenberg Foundation, Sweden, $50,000 (2027-2029). Ralph Powe Award, PI, $10,000 (06/2019-05/2020); WBC center: share for Wang: $10,000 (5/2023-12/2023)

## PUBLICATIONS (8,800 citations, H-index = 48)

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

114. A Ankur, A Jacob, I Gautam, JP Latge, T Wang, Solid-State NMR: What Can We Learn About Fungal Cell Walls and Where Do We Go Next? Invited review. Revised.

113. 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.

112. I Gatuam, M Suuring, A Ankur, A Withrow, Y Xu, JP Latge, B Briard, T Wang. Dynamic reprogramming of fungal cell walls underlies germination and immune exposure in zygomycetous fungal pathogens. (In revision; NCOMMS-26-046899-T). BioRxiv. DOI: 10.64898/2026.05.12.724644

111. YK Ranasinghe, A Ankur, JP Latge, T Wang. Distinguishing polymer turnover from de novo biosynthesis reveals dynamic cell wall remodeling during Aspergillus fumigatus conidial germination. In revision. Available at BioRxiv. DOI: 10.64898/2026.07.31.740354

110. HT Chu, I Gautam, S Yenamendra, T Wang, P Arumugam. Perturbing glycosylphosphatidylinositol (GPI)-anchor biosynthesis alters cell wall architecture and modulates fungal morphology. In revision. Available at BioRxiv. DOI: 10.64898/2026.06.05.730525

---------- Independent contributions ----------

109. A Jacob, W Qi, JR Yarava, M Barkarar, A Karai, JV Vermaas, JR Kohler, T Wang. Oxidative stress-responsive cell wall remodeling depends on phosphate in Candida albicans. ***Nat Commun*** 17, 10676 (2026)

108. P Xiao, P Sahu, D Debnath, DA Dingwell, MCD Widnage, CH Cunningham, Y Pu, T Wang. Navigating guaiacyl and syringyl lignin structural complexity in intact plant cell walls through $^{13}C$ chemical shift mapping by two-dimensional solid-state NMR. ***Magn Reson Chem***, epub ahead online (2026).

107. A Ankur, R Upadhya, M Doosti, D Ferreira, SE Miller, L Xie, I Hung, J Lodge, T Wang. Molecular architecture of Cryptococcus cell walls reveals species-specific chitosan-dependent remodeling. ***Nat Commun*** online (2026)

106. AH Willet, A Jacob, LA Turner, A Alsanad, T Wang, KL Gould. A bipartite glucan synthase-remodeler module organizes branched glucan assembly in the fungal cell wall. ***Nat Commun*** 17, 10213 (2026).

105. K Singh, A Ankur, JR Yarava, CM Fernandes, G Vascelli, A Sulla, T Zelante, M Del Poeta, T Wang. α-1,3-Glucan-driven remodeling of the conidial cell wall in an Aspergillus fumigatus vaccine strain alters innate immune recognition. ***J Am Chem Soc*** 148, 13, 14546-14558 (2026).

104. P Sahu, D Debnath, P Xiao, SS Gunaga, FJ Scott, M Bentelspacher, Y Xu, F Mentink-Vigier, J Barros, T Wang. Precursor-dependent routing of aromatic amino acids determines lignin structure in grasses by sensitivity-enhanced solid-state NMR. ***J Am Chem Soc*** 148, 13, 14320-14332 (2026).

103. Y Hu, S Yu, Z Ling, P Xiao, Y Zhu, G Miao, Y He, H Li, S Chen, T You, F Xu*, T Wang*, Y. Nishiyama*. Native architecture of wheat straw cell walls: A unified model from X-ray scattering and solid-state NMR. ***J Am Chem Soc*** 148, 20448-20463. Front cover.

102. AJ Terrebonne, M Liu, R Rumsey, T Wang, A Aiyar, Z Zhang, C Ding, P Wang, Overcoming barriers to heterologous gene expression uncovers regulatory constraints in the mucoralean pathogen Rhizopus delemar. ***J Fungi*** 12, 771 (2026).

101. P Sahu, P Xiao, D Debnath, JR Yarava, Q Cheng, T Wang. Resolving aromatic spectral congestion in whole-cell solid-state NMR: diagnostic criteria for distinguishing condensed tannins from lignin in plant tissues. ***Cell Surf*** 16, 100182 (2026).

100. M Widanage, A Ankur, B Addison, I Huang, X Wang, PL Gor'kov, Z Gan, AE. Harman-Ware, T Wang. From overlap to resolution: cellular solid-state NMR at ultrahigh-field 1.5 GHz demonstrated on fungal cell wall. ***Solid State Nucl Magn Reson*** 142, 102075 (2026).

99. A Ankur, CS Vojvodin, T Wang. Decoding the structural complexity of fungal α- and β-glucan matrix via statistical analysis of solid-state NMR chemical shifts. ***Isr J Chem*** 66, e70024 (2026). Invited article for the glycoscience special issue.

98. 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. ***Proc Natl Acad Sci USA*** 23, e2530456123 (2026).

97. I Gautam, GV Munoz, A Karai, JP Latge, YP Llano, N Gunde-Cimerman, RAB Garcia, T Wang. Chaotropic ions reshape the cell wall of the obligate halophile Aspergillus atacamensis: Insights from solid-state NMR. ***Carbohydr Polym*** 381, 125157 (2026).

96. 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*** 36, 674-691 (2026).

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. ***Eng Life Sci*** 26, e70066 (2026).

94. F Daneshnia, L Cai, D Gunasekaran, I Gautam…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*** 14, e03043-25 (2026)

93. M Nokab, C Vojvodin, O Alghazwat, EA Zeitoun, M Vanderveken, E Caron, I Gautam, D Debnath, BK Husband, FL Hatton, C Martin-Olmos, T Wang*, FH Marchesini, KO Sebakhy*. Solution viscosity and ion-specific crosslinking govern structure of alginate and pectin hydrogels: Correlating solid-state NMR with rheology. ***Int J Biol Macromol*** 341, 150321 (2026)

92. 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.*

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 α-glucans as structural scaffolds in Cryptococcus cell walls for chitin, capsule, and melanin: Insights from $^{13}C$ and $^{1}H$ 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*. α-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 Tessonnier, 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 β-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 Aβ1-42 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 13C-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 Elrakaiby, MEHE Nokab, JE Sayed, A Elshewy, KO Sebakhy, N Moneib, T Wang*, TJ Smith*, MH Habib*. Polymerization potential of a bacterial CotA-laccase for β-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). *74 citations*

70. MCD Widanage, I Gautam, D Sarkar, F Mentink-Vigier, JV Vermaas, SY Ding, AS Lipton, T Fontaine, JP Latge, P Wang, T Wang. Adaptative survival of Aspergillus fumigatus to echinocandins arises from cell wall remodeling beyond β-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 EurekAlert, MSUToday, and National MagLab. 75 citations*

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 Pb5(PO4)3OHδ 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. 115 citations*

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 β-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 30th 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. 219 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.* ***316 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 $^{13}C$ natural abundance dynamic nuclear polarization. ***Biomacromolecules***, 23, 2290-2301 (2022). *Supp cover*

54. SC Shekar, W Zhao, LD Fernando, I Hung, T Wang. A $^{13}C$ 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 Weldeghiorghis, 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. 196 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. 146 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. 110 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 $^{13}C$–$^{13}C$ 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 β-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.* ***723 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). *436 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!* ***453 citations***

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

31. M Roos, T Wang, A Shcherbakov, M Hong. Fast magic-angle-spinning $^{19}$F spin exchange NMR for determining nanometer $^{19}$F–$^{19}$F distances in proteins and pharmaceutical compounds. ***J Phys Chem B*** 122, 2900-11 (2018)

30. P Phyo, T Wang, Y Yu, H O'Neill, M Hong. Direct determination of hydroxymethyl conformations of plant cell wall cellulose using $^{1}$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 $^{13}$C NMR chemical shifts of cellulose: a computational study. ***Cellulose*** 25, 23-36 (2018)

28. P Phyo[#], T Wang[#], SN Kiemle[#], 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). [#]*Equal contribution. 108 citations*

27. P Phyo, 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. $^{2}$H-$^{13}$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 β-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 β-amyloid fibrils investigated by solid-state NMR. ***J Am Chem Soc*** 139, 6242-6252 (2017). *107 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). *135 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). *274 citations*

20. M Elkins[#], T Wang[#], M Nick, H Jo, T Lemmin, Y Wu, SB Prusiner, WF DeGrado, J Stöher and M Hong. Structural polymorphism of Alzheimer's β-amyloid fibrils as controlled by an E22 switch: a solid-state NMR study. ***J Am Chem Soc*** 138, 9840-52 (2016). *[#]Equal contribution. 105 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). *178 citations*

18. T Wang, P Phyo 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) 291 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 $^{13}C$-$^{13}C$ 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 $Zn^{2+}$ Transporting Four-Helix Bundle. ***Science*** 346, 1520-24 (2014). *Featured in Science, Nat Chem, C&EN, EurekAlert, and F1000. 384 citations*

12. T Wang, A Salazar, O Zabotina, M Hong. Structure and dynamics of Brachypodium primary cell walls polysaccharides from 2D $^{13}C$ NMR spectroscopy. ***Biochemistry*** 53, 2840-54 (2014). *103 citations*

11. PB White[#], T Wang[#], 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). *[#]Equal contribution. 178 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) *272 citations*

9. T Wang, H Yao, M Hong. Determining the depth of insertion of dynamically invisible membrane peptides by gel-phase $^{1}H$ spin diffusion heteronuclear correlation NMR. ***J Biomol NMR*** 56, 139-48 (2013)

8. T Wang, O Zabotina, M Hong (2012). Pectin-cellulose and protein-polysaccharide interactions in Arabidopsis primary cell walls by 2D MAS NMR. ***Biochemistry*** 51, 9846-56. *213 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$^{A903V}$ and CESA3T$^{942I}$ of cellulose synthase. ***Proc Natl Acad Sci USA*** 109, 4098-4103 (2012). *224 citations*

4. M Dick-Perez, T Wang, A Salazar, O Zabotina, M Hong. Multidimensional solid-state NMR studies of pectin structure and dynamics in $^{13}$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). *107 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

92. Alpine Conference on Magnetic Resonance in Solids Chamonix Mont-Blanc, France, (Sept 12-16, 2027). **Invited.**
91. GRC Carbohydrates, New London, NH (June 6-11, 2027). **Invited.**
90. Department of Chemistry, Brown University, Providence, RI (Jan 29, 2027). **Invited.**
89. Isotope Day Webinar Series, Cambridge Isotope Laboratories (Nov 12, 2026). **Invited.**
88. Applications and Methods Webinar Series, Nanyang Technological University, Singapore (Nov 10, 2026). **Invited.**
87. Annual symposium of protein NMR and integrated structural biology, Ames, IA (Oct 23-24, 2026). **Invited.**
86. International Conference on Fungal Extremophiles, Jaen, Spain (Sept 21-24, 2026). **Invited.**
85. 21st Annual Midwest Carbohydrate and Glycobiology Symposium (MCGS), East Lansing, MI (Sept 19, 2026). **Invited.**
84. 32nd ICMRBS Conference, Davos, Switzerland (Aug 23-27, 2026). **Award lecture**
83. 65th Rocky Mountain Conference on Magnetic Resonance, Snowbird, UT (Aug 2-6, 2026). **Invited.**
82. GRC Fungal Cell and Molecular Biology, Holdernes, NH (June 23, 2026). **Invited**
81. University of Florence, Florence, Italy (May 22, 2026)
80. GRC Lignin, Lucca, Italy (May 17-22, 2026). **Invited.**
79. Materials and NMR Insights Conference (MANIC), Rockville, MD, (May 7-9, 2026). **Invited**
78. Fungal Genetics Conference, Pacific Grove, CA (March 19, 2026). **Invited**
77. Zygosporic and Zoosporic Fungi Symposium, Fungal Genetics Conference, Pacific Grove, CA (March 17, 2025).
76. Department of Chemistry and Biochemistry, Miami University, Hamilton, OH (Jan 19, 2026)
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$^{st}$ 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$^{th}$ ENC and 24$^{th}$ 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$^{th}$ 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$^{st}$ International Symposium on Wood Fiber and Pulping Chemistry (ISWFPC), Venice, Italy (July 5, 2023). **Keynote**
57. 64$^{th}$ 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$^{th}$ 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. 48th 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 *(*PUI)*, 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

- Priya Sahu, 2026 AIChE Annual Meeting, Minneapolis, MN (Nov 11, 2026)
- Peng Xiao, 37th MOOT NMR Symposium, Toronto, Canada (Oct 25, 2026).
- Ankur Ankur, Annual symposium of protein NMR and integrated structural biology, Ames, IA (Oct 23, 2026).
- Anand Jacob, 10th Gateway NMR conference, East Lansing, MI (Oct 3, 2026).
- Anand Jacob, 21st MCGS, East Lansing, MI (Sept 19, 2026).
- Ankur Ankur, ACS National Meeting, Chicago (Aug 23-27, 2026)

- Priya Sahu, ACS National Meeting, Chicago (Aug 23-27, 2026)
- Kalpana Singh, ACS National Meeting, Chicago (Aug 23-27, 2026)
- Ankur Ankur, 67th Experimental NMR Conference (April 12-16, 2026)
- Isha Gautam, 67th Experimental NMR Conference (April 12-16, 2026)
- Isha Gautam, Fungal Genetics Conference, Pacific Grove, CA (March 17-22, 2025).
- 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, 62nd 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, 64th 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, 61st Annual Rocky Mountain Conference on Magnetic Resonance, Solid-state NMR Symposium, Copper Mountain, CO (July 25-29, 2022).
- Wancheng Zhao, 63rd Experimental Nuclear Magnetic Resonance Conference, Orlando, FL (Apr 27, 2022)
- Alex Kirui, 49th SouthEast Magnetic Resonance Conference (SEMRC), Baton Rouge, LA (Oct 23, 2021)
- Alex Kirui, 48th SouthEast Magnetic Resonance Conference (SEMRC), Gainesville, FL (Oct 26, 2019)

## GROUP MEMBERS

| | |
|---|---|
| • Dr. Peng Xiao, postdoc associate | Jan 2024-present |
| • Dr. Bijaylaxmi Patra, incoming postdoc associate | joining Mar 2027 |
| • Dr. Jayasubba Yarava, incoming research scientist | joining Dec 2026 |
| • Dr. S. Chandra Shekar, incoming research scientist | joining Feb 2027 |
| • 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, graduate student | July 2025-present |
| • Yujie Jiang, graduate student | Oct 2026-present |
| • Kaan Ceyhan, graduate student | Oct 2026-present |
| • Rohan Rathi, master student, data science | Oct 2026-present |
| • Pranesh Vats, undergraduate, computer science | Oct 2026-present |
| • Aletha Elser, undergraduate | Oct 2026-present |
| • Ryan Sheehan, undergraduate | Aug 2026-present |
| • Lilian Norkus, undergraduate | Aug 2026-present |
| • Clare Daniels, undergraduate | Aug 2026-present |

- Mehmet Deniz Gencer, undergraduate Aug 2026-present

## ALUMNI

- Dr. Wancheng Zhao, PhD student (April 2019-Dec 2023)
  Current: Research Faculty, National MagLab
- Dr. Isha Gautam, PhD Student (Jan 2021-May 2026)
  Current: Postdoc Associate at UConn Health
- 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. Xue Kang, postdoc associate (Oct 2017-Aug 2019)
  Current: Principal Investigator, Ningbo University, China
- Dr. Nader Ghassemi, postdoc associate (Sept 2020-Dec 2021)
  Current: Assistant Professor, Case Western Reserve University, United States
- Dr. Fabien Deligey, postdoc associate (Jan 2020-June 2022)
  Current: Client Support & Training Engineer, Bruker, Wissembourg, France
- Dr. Qinghui Cheng, postdoc associate (Aug 2022-July 2024)
  Current: Associate Professor/Associate Investigator, Guangxi Academy of Sciences
- Dr. Mustapha El Hariri Nokob, postdoc associate (Jan 2024-Dec 2025)
  Current: Research Scholar, University of Lorraine, France
- Dr. Krishna Bankala, postdoc associate (July 2023-June 2024)
  Current: Senior Resident, All India Institute of Medical Science
- Dr. Cameron Vojvodin (Jan 2024-May 2026)
  Current: CIFAR Fellow, University of Alberta, Canada
- 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 (17): Jack Marsh, Aswath Karai (2026 Barry Goldwater scholar)[###], Dibakar Roy[#], Dylan Dinkins, Abdul Alsanad[#], Anna Nguyen, Adrian Chen[##], Brooke Badeaux, Uluc Ozdenvar[#], Kayla Bougere, Joshua Toche, Cassie C Louque, Sean Wood, Matthew Burton, Jenny Quach[#] , Kieran Doran, Tatum Beckemeyer ([#] with publications)
- High school student researchers: Anthony Liu (2026) and Reina Li (2025)[#] ([#] with publication; now at GalTech)

## PROFESSONAL SERVICE

- **Co-organizer** of 2026 Gateway NMR Conference, East Lansing, MI, 2026
- **Co-organizer** of Symposium on Advances in Characterization and Imaging of Biomaterials and Biomass, EPB Division, 2026 AIChE Annual Meeting Minneapolis, MN (Nov 8-12, 2026)
- **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$^{th}$ grade.
  Hosted a booth on the Chemistry Day by ACS MSU chapter, Nov 1, 2025, with 800 K-12 students and parents.
  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 equipment committee (Chair 2026-present; member 2022-2026); MSU CEM graduate admission committee (member, 2024-present); Space committee (member, 2026-present) 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 101 journals** (329 different manuscripts), 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** (20 programs):
  Standing Member of NIH AIRT study section, Dec 2025-June 2029; 3 panels per year
  NSF EPSCoR Research Incubators for STEM Excellence (E-RISE) program, ad hoc, Nov 2026
  NIH 2026/10 ZRG1 DCAI-U (82) S study section, ad hoc reviewer, July 2026
  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 and 2025
  DOE BER Bioimaging for Bioeconomy & Environment, review panel, 2024
  Swiss National Science Foundation (SNSF), ad-hoc, 2024, 2026
  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