

## 朱應懷



職稱： 助理教授  
學院/部門： 藥學院  
中藥質量研究國家重點實驗室  
電郵地址： yhzhu@must.edu.mo  
電話： (853) 8897-2853  
辦公室： E213B  
郵寄地址： 澳門氹仔偉龍馬路

**教学科目：**基礎化學 (BPAZ0002)、基礎化學實驗 (BPAZ0003)、藥學基礎化學 (BPAZ0006)、藥學基礎化學實驗 (BPAZ0007)、藥物化學 (BPAZ0022)、藥物化學實驗 (BPAZ0023)

**研究方向：**抗癌與抗風濕關節炎創新藥和新療法、硼化學與應用、納米材料在催化與醫藥中的應用

朱應懷博士畢業於南開大學。曾任職南開大學化學系副教授，新加坡科技發展局化學工程研究院高級研究員和北伊利諾大學訪問科學家，東陽光研究院及抗感染新藥研發國家重點實驗室顧問專家。現任職於澳門科技大學藥學院。他長期從事硼基抗腫瘤藥物，納米催化和生物質轉化研發，迄今已發表包括 *Angew Chem Int Ed* 和 *J Am Chem Soc* 等論文78篇，被引數2400多次。撰寫書目11余章，長期擔任多種國際期刊如 *Organometallics*, *Inorg Chem* 等期刊審稿人。

### 學歷

1994 - 1997 南開大學 / 博士學位  
1991 - 1994 南開大學 / 碩士學位  
1987 - 1991 安徽師範大學 / 學士學位

### 工作經歷

2017.9 - 現職 藥學院，中藥質量研究國家重點實驗室  
2016.10 - 2017.8 北伊利諾大學 / 訪問科學家  
2002.3 - 2016.9 新加坡科技研究局化學與工程研究院 / 高級研究員  
2000.6 - 2002.1 北伊利諾大學 / 博士後研究員  
1997.7 - 2000.6 南開大學 / 副教授

### 學術成果

近年發表的主要SCI期刊論文 (通訊作者\*)

1. Synthesis and in vitro anti-tumor activity of carboranyl levodopa, **Yinghuai Zhu\***, Yongxiang Lin, Narayan, S. Hosmane, *Bioorg. Chem.* 2019, 90, 103090.
2. The Current Status and Perspectives of Delivery Strategy for Boronbased Drugs, **Zhu Yinghuai\***, Xinglong Lin, Hongming Xie, Jianlin Li, Narayan S. Hosmane and Yingjun Zhang, *Current Medicinal Chemistry*, 2019, 26, DOI: 10.2174/0929867325666180904105212
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6. Boron-enriched advanced energy materials, **Yinghuai Zhu\***, Shanmin Gao, Narayan S. Hosmane, Inorg. Chim. Acta 2018, 471, 577–586.
7. Ionic composite of palladium(II)/iron bis(dicarbollide) for catalytic oxidative carbonylation in the formation of diphenyl carbonate, Algin Oh Biying, Karen Tang Yuanting, Narayan S. Hosmane, **Yinghuai Zhu\***, J. Organomet. Chem. 2017, 849–850, 195–200.
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9. Pd-Ce Nanoparticles Supported on Functional Fe-MIL-101-NH<sub>2</sub>: An Efficient Catalyst for Selective Glycerol Oxidation, Xinhang Li, Adrian Kaizen Tjiptoputro, Jun Ding, Jun Min Xue, **Yinghuai Zhu\***, Catal. Today 2017, 279, 77–83.
10. Selective Lignin Oxidation towards Vanillin in Phenol Media, Jizhong Luo, Prawirasatya Melissa, Wenguang Zhao, Zhan Wang, **Yinghuai Zhu\***, ChemistrySelect 2016, 1, 4596–4601.
11. Production of Terephthalic Acid from Lignin-Based Phenolic Acids by a Cascade Fixed-Bed Process, Zhiyu Bai, Wen Chuen Phuan, Jun Ding, Teck Huat Heng, Jizhong Luo, **Yinghuai Zhu\***, ACS Catal. 2016, 6, 6141–6145.
12. Direct Synthesis of Carboranylpolystyrene and Their Applications for Oxidation Resistance of Graphene Oxides and Catalyst Support, **Zhu Yinghuai\***, Zhao Wengguang, Narayan S. Hosmane, J. Organomet. Chem. 2015, 798, 80–85.
13. Advanced Developments in Cyclic Polymers: Synthesis, Applications and Perspectives, **Yinghuai Zhu\***, Narayan S Hosmane, ChemistryOpen 2015, DOI: 10.1002/open.201402172.
14. Nanocatalysis: Recent Advances and Applications in Boron Chemistry, **Yinghuai Zhu\***, Narayan S Hosmane, Coord. Chem. Rev. 2015, 293–294, 357–367. (IF 10.5)
15. Cross-Coupling Reaction between Arylboronic Acids and Carbonyl Iodides Catalyzed by Graphene Oxide (GO)-Supported Pd (0) Recyclable Nanoparticles for the Synthesis of Carboranylaryl Ketones, Algin Oh Biying, Venu R Vangala, Chia Sze Chen, Ludger Paul Stubs, Narayan S. Hosmane, **Zhu Yinghuai\***, Dalton Trans. 2014, 43, 5014–5020. (IF 3.8)
16. Boron-enriched nanocomposites: Future perspective of boron-based medicinal chemistry. **Zhu Yinghuai\***, Narayan S. Hosmane\*, Biochem. Biophys. J. Neutron Therapy Cancer Treat. 2013, 1, 28–32.
17. Synthesis of Carboranyl Amides Catalyzed by Recyclable Pd (0) Nanoparticles Supported on Carbon Nanotubes (CNTs), Algin Oh Biying, Karen Tang Yuanting, Narayan S. Hosmane, **Zhu Yinghuai\***, J. Organomet. Chem. 2013, 747, 184–188.
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- Zheyu Shen, Aiguo Wu, **Yinghuai Zhu**, Narayan S. Hosmane, *ChemistryOpen* 2013, 2, 88–92. (IF 3.3)
20. Applications and perspectives of boron-enriched nanocomposites in cancer therapy, **Zhu Yinghuai\***, Narayan S. Hosmane, *Future Med. Chem.* 2013, 5, 705–714. (IF 2.5)
  21. Palladium Nanoparticles Supported on ZIF-8 As an Efficient Heterogeneous Catalyst for Aminocarbonylation, Tuan T. Dang, **Yinghuai Zhu**, Joyce S. Y. Ngiam, Subhash C. Ghosh, Anqi Chen, Abdul M. Seayad, *ACS Catal.* 2013, 3, 1406–1410. (IF 9.3)
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  23. Syntheses of Cyclic Poly(lactones) by Zwitterionic Ring Opening Polymerization Catalyzed by N-Heterocyclic Carbene, Aitha Vishwa Prasad and **Zhu Yinghuai\***, *J. Appl. Polym. Sci.* 2013, 128, 3411–3416.
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  25. An Efficient and Recyclable Catalytic System Comprising Nano-Palladium (0) and a Pyridinium Salt of Iron Bis(dicarbollide) for Oxidation of Benzyl Alcohol and Lignin, **Yinghuai Zhu\***, Li Chuanzhao, Meriska Sudarmadji, Ng Hui Min, Algin Oh Biying, John A. Maguire, Narayan S. Hosmane\* *ChemistryOpen* 2012, 1, 67–70.
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  27. Zwitterionic Ring Opening Polymerization of Lactide by Metal Free Catalysts: Production of Cyclic polymers, Aitha Vishwa Prasad\*, Ludger Paul Stubbs, Ma Zhun, **Zhu Yinghuai\***, *J. Appl. Polym. Sci.* 2012, 123, 1568–1575.
  28. An Efficient and Recyclable Catalytic System Comprising Nano-Iridium (0) and a Pyridinium Salt of *nido*-Carboranyldiphosphine for the Synthesis of One-Dimensional Boronate Esters *via* Hydroboration Reaction, **Yinghuai Zhu\***, Shi Hui Agnes Jang, Yue Hao Tham, Oh Biying Algin, John A. Maguire, Narayan S. Hosmane, *Organometallics* 2012, 31, 2589–2596. (IF 3.9)
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  31. Boron Drug Delivery *via* Encapsulated Magnetic Nanocomposites: A New Approach for BNCT in Cancer Treatment, **Zhu Yinghuai\***, Lin Yongxiang, Zhu Yi Zhun, Lu Jia, John A. Maguire, Narayan S. Hosmane\*, *J. Nanomater.* 2010, Article ID 409320.
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37. Synthesis, Characterization and Polymerization of a Neutral Tantalacarborane Sandwich Complex Derived from Quintanionic *exo*-Polyhedrally Linked Bis(C<sub>2</sub>B<sub>10</sub>-carborane) Ligand, **Zhu Yinghuai\***, Lee Cjin Nong, Li Chuan Zhao, Effendi Widjaja, Chong Siow Hwei, Wang Cun, Jozel Tan, Martin Van Meurs, Narayan S. Hosmane, John A. Maguire, *Organometallics* 2009, 28, 60–64.
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49. Synthesis and Catalytic Activities of Single-Wall Carbon Nanotubes-Supported Nickel (II) Metallocarboranes for Olefin Polymerization, **Zhu Yinghuai**\*, Shirley Lo Pei Sia, Keith Carpenter, Fethi Kooli, Richard A. Kemp, J. Phys. Chem. Solids 2006, 67, 1218–1222.
50. Substituted-Carborane-Appended Water Soluble Single-Wall Carbon Nanotubes: New Approach to BNCT Drug Delivery, **Zhu Yinghuai**\*, Ang Thiam Peng, Keith Carpenter, John A. Maguire, Narayan S. Hosmane, Masao Takagaki, J. Am. Chem. Soc. 2005, 127, 9875–9880.
51. Another Example of Carborane Based Trianionic Ligand: Syntheses and Catalytic Activities of Cyclohexylamino Tailed *ortho*-Carboranyl Zirconium and Titanium Dicarbolides, **Zhu Yinghuai**\*, Shirley Lo Pei Sia, Fethi Cooli, Keith Carpenter, Richard A. Kemp, J. Organomet. Chem. 2005, 690, 6284–6291.
52. Syntheses and Catalytic Activities of Group 4 Metal Complexes Derived from C<sub>(Cage)</sub>-Appended Cyclohexyloxocarborane Trianion, **Zhu Yinghuai**\*, Z. Yulin, K. Carpenter, J.A. Maguire, N.S. Hosmane, J. Organomet. Chem. 2005, 690, 2802–2808.
53. Syntheses and Catalytic Properties of Polystyrene Supported Nickel (II) Carborane Complexes, **Zhu Yinghuai**\*, Anbanandam Parthiban, Fethi Ben Hedi Kooli, Cat. Today 2004, 96, 143–146.
54. Silyl Group Mediated Linkage of *closo*-C<sub>2</sub>B<sub>10</sub>-Cage to *nido*-C<sub>2</sub>B<sub>4</sub>-Carborane: Synthesis of the Novel Carborane Ligand, 1-R-2-[5'-(SiMe<sub>2</sub>CH<sub>2</sub>)-2',3'-(SiMe<sub>3</sub>)<sub>2</sub>-2',3'-C<sub>2</sub>B<sub>4</sub>H<sub>5</sub>]-1,2-C<sub>2</sub>B<sub>10</sub>H<sub>10</sub> (R = Me, Ph), **Zhu Yinghuai**, John A. Maguire, and Narayan S. Hosmane\*, Inorg. Chem. Commun. 2003, 6, 1344–1346.
55. An Effective System to Synthesize Arylacetones. Substrate-Ionic Liquid-Ultrasonic Irradiation, **Zhu Yinghuai**\*, Stefan Bahnmüller, Narayan S. Hosmane, John A. Maguire, Chem. Lett. 2003, 32, 730–731.
56. An Effective System to Synthesize Methanofullerenes: Substrate-Ionic Liquid-Ultrasonic Irradiation, **Zhu Yinghuai**\*, Stefan Bahnmüller, Ching Chibun, Keith Carpenter, Narayan S. Hosmane, John A. Maguire, Tetrahedron Lett. 2003, 44, 5473–5476.
57. (R)-Binap-Mediated Asymmetric Hydrogenation with a Rhodacarborane Catalyst in Ionic Liquid Media, **Zhu Yinghuai**\*, Keith Carpenter, Ching Chi Bun, Stefan Bahnmüller, Chan Pek Ke, Venugopal Shanmugham Srid, Leong Weng Kee and M. Frederick Hawthorne, Angew. Chem. Int. Ed. 2003, 42, 3792–3795. (IF 11.3)
58. Group 4 Metallocarboranes of Constrained Geometries Derived from B<sub>(cage)</sub>- and C<sub>(cage)</sub>-Silylamido-Substituted Carborane Ligands: A Synthetic and Structural Investigation, Jianhui Wang, **Yinghuai Zhu**, Shoujian Li, Chong Zheng, John A. Maguire, Narayan S. Hosmane\*, J. Organomet. Chem. 2003, 680, 173–181.
59. Synthesis of the Novel Ionic Liquid-[N-pentylpyridinium]<sup>+</sup>[*closo*-CB<sub>11</sub>H<sub>12</sub>]<sup>-</sup> and Its Usage as a Reaction Medium in Catalytic Dehalogenation of Aromatic Halides, **Zhu Yinghuai**\*, Ching Chibun, Keith Carpenter, Xu Rong, Selvasothi Selvaratnam, Narayan S. Hosmane, John A. Maguire, Appl. Organometal. Chem. 2003, 17, 346–350.

#### 專利 (通訊作者 \*)

1. Carborane trianion based catalyst, **Zhu Yinghuai**\*, US Patent 7053158, WO 2005/028520 A1.

2. Bis(aminoalkyl)-dicarbaborane derived boron neutral capture therapy drugs, **Zhu Yinghuai\***, WO2007058630A1, 2006.
3. Method for preparation <sup>10</sup>B enriched polyhedron boron clusters, **Zhu Yinghuai\***; Effendi Widjaja, WO28018838A1, 2008.

#### 書/著作 (通訊作者 \*)

1. Nanostructured Boron Compounds for Boron Neutron Capture Therapy (BNCT) in Cancer Treatment, Chapter 3.4, pp 371–388, Shanmin Gao, **Yinghuai Zhu\***, Narayan Hosmane,\* in book << Boron-Based Compounds: Potential and Emerging Applications in Medicine >>, Hey-Hawkins, E. and Vinas Teixidor C., Eds, John Wiley & Sons Ltd, Chichester, UK, 2018.
2. Carbonaceous Materials, Chapter 2.2, pp 40–71, **Yinghuai Zhu\***, Shanmin Gao, Narayan Hosmane, in book << Comprehensive Energy Systems >>, Dincer, I., Ed, Elsevier, Oxford, UK, 2018.
3. Endo-Fullerenes and Carboranes, Chapter 3.20, pp. 479–487, **Yinghuai Zhu\***, Bai Zhiyu, Vijayaraghavan Kalavakunda\*, Narayan Hosmane\*, in book << Comprehensive Supramolecular Chemistry II >> and in << Molecular Electronics and Optics >> under “Reference Module in Chemistry, Molecular Sciences and Chemical Engineering”, Atwood, J. L., Ed, Gokel, G., Barbour, L., Rissanen, K., Jayawickramarajah, J., Wilson, A., Dalgarno, S., MacGillivray, L., Glass, T. and Raston, C., Eds, Elsevier, UK, 2017.
4. Catalytic Application of Magnetic Nanocomposites, Chapter 10, **Yinghuai Zhu\***, in book <<Advances in Magnetic Materials: Processing, Properties, and Performance>>, Sam Zhang Shanyong, Dongliang Zhao, Eds, CRC Press, Florida, USA, 2017.
5. Applications of Nanocatalysis in Boron Chemistry, Chapter 8, pp. 199–217, **Yinghuai Zhu**, Amartya Chakrabarti, Narayan S. Hosmane\*, in << Boron – The Fifth Element >>, Hnyk, D. and McKee, M., Eds, Springer, 2015.
6. Applications of Ionic Liquids in Lignin Chemistry, Chapter 13, pp. 315–346, **Zhu Yinghuai\***, Karen Tang Yuanting, and Narayan S. Hosmane, in book << Ionic Liquids - New Aspects for the Future >>, Jun-Ichi Kadokawa, Ed, InTech., 2013.
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8. Recent Developments in the Boron Neutron Capture Therapy (BNCT) Driven by Nanotechnology, Chapter 7, pp. 147–162, **Yinghuai Zhu\***, John A. Maguire and Narayan Hosmane, in book << Boron Science: New Technologies and Applications >>, CRC Press, Florida, USA, 2011.
9. Boron-Based Hybrid Nanostructures: Novel Application of Modern Materials, Chapter 6, pp. 181–198, **Yinghuai Zhu**, Koh Cheng Yan, John A Maguire, Narayan S. Hosmane\*, in book <<Hybrid Nanomaterials: Synthesis, Characterization, and Applications>>, Chauhan, B. P. S., Ed, John Wiley & Sons, NJ, USA, 2011.
10. Ionic Liquids in Catalytic Biomass Transformation, Chapter 1, **Zhu Yinghuai\***, Algin Oh Biying, Xiao Siwei, Narayan S Hosmane and John A. Maguire, in book <<Application of Ionic Liquids in Science and Technology>>, Scott Handy, Ed, InTech, Croatia, 2011.

#### 會議論文 (通訊作者 \*) :

- (1) Construction and applications of biomass-based cyclic polylactones, **Y. Zhu\***, Poster 1208, the International Chemical Congress of Pacific Basin Societies 2015, 15-20 December, 2015, Honolulu, Hawaii, USA.
- (2) Catalytic Applications of Palladium Nanoparticles-supported Nanocomposites in Carbonylation Reactions, **Zhu Yinghuai\***, IV-OP13, XII European Congress on Catalysis, 30 August- 4 September 2015, Kazan, Russia.
- (3) Construction and New Applications of Biomass-based Cyclic Polylactones, **Zhu Yinghuai\***, IL-13, Invited talk, The 5<sup>th</sup> International Conference on Bio-based Polymers (ICBP2015), 24-27 June, 2015, Singapore, National University of Singapore.
- (4) Selective Oxidation of Glycerol to Dihydroxyacetone by High Efficient MOF Supported Palladium Nanoclusters-based Catalyst, **Yinghuai Zhu\***, D2S-01(II), SYM-B2, The 41<sup>th</sup> International Conference on Coordination Chemistry, 21-25 July 2014, Singapore.
- (5) Constructing Cyclic Polylactone - Clay Hybrid: A Green Catalyst Support , Aitha Vishwa Prasad, Ludger Paul Stubbs, **Zhu Yinghuai\***, Division of Polymeric Science and Engineering, Session of General papers/New concepts in polymeric materials, final paper number 315, The 246th American Chemical Society National Meeting & Exposition, 8-12 September, 2013, Indianapolis, Indiana, USA.
- (6) Catalytic Applications of Palladium (0) Nanoparticles Supported on a Green Hybrid of Cyclic Poly(L-lactide) - Clay, **Zhu Yinghuai\***, Division of Catalysis Science and Technology, Session of CATL Poster session, final paper number 105, The 246th American Chemical Society National Meeting & Exposition, 8-12 September, 2013, Indianapolis, Indiana, USA.
- (7) Construction of Transition Metal Nanoparticles-based Sustainable Catalysts for Aminocarbonylation Reactions, **Yinghuai Zhu\***, poster under topic of Green Synthesis & Catalysis, the 15<sup>th</sup> Asian Chemical Congress (15ACC), 19-23 August, 2013, Singapore.
- (8) Syntheses of Cyclic Poly(lactones) by Zwitterionic Ring Opening Polymerization Catalyzed by N-Heterocyclic Carbene, Aitha Vishwa Prasad, Ludger Paul Stubbs, **Zhu Yinghuai\***, Oral presentation, 14F21, page 284, The 9<sup>th</sup> International Polymer Conference (IPC 2012), 11-14 December, 2012, Kobe, Japan.
- (9) Exploration of Palladium (0) Nanocatalysts in Sustainable Organic Transformations, **Yinghuai Zhu\***, 2nd International Conference on Molecular and Functional Catalysis (ICMFC-2), 30-31 July, 2012, Singapore.
- (10) Application of ionic liquid stabilized transition metal nanoparticle based catalysts in sustainable transformation, **Yinghuai Zhu\***, Green Chemistry 2011 Innovations, 4-7 December, 2011, Melbourne, Australia.

#### 研究項目(部分近期項目)

1. 2018–2021, Synthesis and Bio-assessment of Novel Boron Analogues of  $\alpha$ -Amino Acid-based Anti-rheumatoid Arthritis Drugs, The Science and Technology Development Fund, Macau, SAR, PI.
2. 2016–2017, Highly Reactive and Air-Sensitive Organoboron Compounds, Tokyo Ohka Kogyo Co., Ltd. Co-PI.
3. 2015–2016, Upgradation of Phenol Mixture from Lignin Oxidative Depolymerization for Terephthalic Acid Synthesis, Agency for Science, Technology and Research (A\*STAR) Grant, PI.
4. 2013–2016, Chemo and Enzyme Catalyzed Depolymerization of Lignin to Vanillin And Derivatives. Agency for Science, Technology and Research (A\*STAR) Grant, Co-PI.

5. 2013–2016, Development of Green and Recyclable Supported Metal Nanoparticles-based Catalysts for Oxidation Reactions of Biomass-derived Alcohols, Singapore-MIT Alliance for Research & Technology (SMART) Funding, PI.

#### 學術機構及社會任職

1. Member: Organizing Committee, conference 15th Meeting of the Asian-Pacific Society for Neurochemistry, 27–29 August, 2018, Macau.
2. Member: Organizing Committee, 5th Asian Association of Schools of Pharmacy (AASP) Deans Forum, 9–11 July, 2018, Macau University of Science and Technology, Macau.
3. Advisor: The State Key Laboratory of Anti-Infective Drug Development, Sunshine Lake Pharma Co Ltd, 2018–present.
4. Member: American Chemistry Society, 2003–2016.
5. Member: American Nano Society, 2011–2015.
6. Member: Editorial advisory board, journal “Pharmaceutics of Novel Drug Delivery Systems: Current Research”, 2011–2014.
7. Member: Editorial advisory board, journal “Biochemical and Biophysical Journal of Neutron Therapy & Cancer Treatments”, 2012–2014.
8. Member: Editorial advisory board, journal “ISRN (International Scholarly Research Network) Inorganic Chemistry”, 2012–2013.
9. Member: Organizing Committee, conference 15th Asian Chemical Congress, 19–23 August, 2013, Singapore.
10. Member: Organizing Committee, conference 41st International Conference on Coordination Chemistry, 21–24 July, 2014, Singapore.
11. Reviewer: International chemistry journals such as Angew Chem Int Ed, J Am Chem Soc, Organometallics, Adv Synth Catal and ACSCat.