

Curriculum Vitae

Rui SHANG, Ph.D. (尚 睿)

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Gender: Male

Birthday: 1987-01

Nationality: China

Major: Synthetic Organic Chemistry, Homogeneous Catalysis, Organometallic Chemistry, Photocatalysis, Optoelectronic Materials Science

Current Organization:

Lecturer (特任講師), The University of Tokyo

Education:

2005 – 2009, Bachelor of Science, Department of Chemistry, University of Science and Technology of China (USTC) (Supervisor: Prof. Dr. Qing-Xiang Guo)

2009 – 2014, Doctor of Philosophy, Department of Chemistry, University of Science and Technology of China (USTC) (Supervisor: Prof. Lei Liu, Yao Fu, Qing-Xiang Guo)

2012 – 2014, Joint-training Ph.D, Department of Chemistry, School of Science, The University of Tokyo (UT) (Supervisor: Prof. Dr. Eiichi Nakamura)

Employment:

2012.10 – 2014.04, Researcher (特任研究員), Department of Chemistry, School of Science, The University of Tokyo (UT) (Employer: Prof. Dr. Eiichi Nakamura)

2014.06 – 2014.09, Postdoctoral Researcher, Department of Chemistry, School of Science, The University of Tokyo (UT) (Employer: Prof. Dr. Eiichi Nakamura)

2014.10 – 2016.09, JSPS Postdoctoral Fellow (JSPS 外国人特別研究員), The University of Tokyo (Host: Prof. Dr. Eiichi Nakamura)

2016.10 – 2017.01, Project Researcher (特任研究員), Department of Chemistry, The University of Tokyo (UT) (Employer: Prof. Dr. Eiichi Nakamura)

2017.02 – now, Lecturer (特任講師), School of Science, The University of Tokyo (UT)

Teaching Experience: 2005 – 2012, Teaching National Chemistry Olympiad for High School Students in Hefei No.1 High School (part time).

2015.09, JSPS Science Dialogue on Synthetic Chemistry Lecture at Tokyo Metropolitan Toyama High School (Shinjuku-ku, Tokyo)

2017 – 2020, Advanced Organic Synthesis for Global Science Course (GSC) undergraduate students of the University of Tokyo

2018.04 – 05, Basic Organic Chemistry I and Organometallic Chemistry for graduate students of the University of Tokyo

2020.05 – 06, Basic Organic Chemistry I and Organometallic Chemistry for graduate students of the University of Tokyo

Reviewer Services:

J. Am. Chem. Soc.; *Angew. Chem. Int. Ed.*; *Nat. Catal.*; *Nat. Commun.*; *Chem.*; *ACS Catal.*; *Org. Lett.*; *ACS Omega*; *Adv. Funct. Mater.*; *Chem. Eur. J.*; *Chem. Asian. J.*; *J. Org. Chem.*; *ACS Appl. Mater. Interfaces.*; *Adv. Synth. Catal.*; *Chem. Cat. Chem.*; *Sci. China:Chem.*; *Chem. Comm.*; *Org. Biomol. Chem.* ([Outstanding Reviewer for *Org. Biomol. Chem.* in 2018](#)); *Dalton Trans.*; *RSC Adv.*; *New. J. Chem.*; *Eur. J. Org. Chem.*

Other Scientific Activities:

2012.09, “Palladium-catalyzed Decarboxylative Cross-couplings of α -Substituted Aliphatic Carboxylate Salts”, Poster on the 17th National Conference on Organometallics (Beijing, China)

2012.11, Member of the Chemical Society of Japan

2013.03, “Iron-Catalyzed Directed C(sp³)-H Bond Arylation with Organozinc Reagents”, Presentation on the 93rd CSJ Annual Meeting (Kyoto, Japan)

2013.12, “Iron-Catalyzed 8-Quinolineamide-Directed C(sp³)-H Bond Arylation”, Presentation and Poster on the International Symposium on Catalysis and Fine Chemical 2013 (C&FC 2013) (Beijing, China)

2014.03, “Iron-Catalyzed Directed Coupling of C(sp²)-H Bond with Organoboron Compounds”, Award Presentation on the 94th CSJ Annual Meeting (Nagoya,

- Japan)
- 2014.07, “Iron-catalyzed Coupling of Organoboronates with Alkenes and Arenes via Directed C–H Bond Activation”, Presentation on XXVI International Conference on Organometallic Chemistry (ICOMC 2014) (Sapporo, Japan)
- 2014.09, “Iron-catalyzed C(sp²)–H Bond Functionalization with Organoboronates”, Presentation and Poster on Japan Organometallic Chemistry Symposium (Yukinto 2014) (Fukuoka, Japan)
- 2014.10, “Iron-catalyzed C(sp²)–H Bond Functionalization with Organoboronates”, Poster Presentation on 4th CSJ Chemistry Festival (第4回CSJ化学フェスタ) (Funabori, Tokyo, Japan)
- 2015.03, “Iron-Catalyzed Directed C(sp²)–H and C(sp³)–H Functionalization with Trimethylaluminum”, Presentation on the 95th CSJ Annual Meeting (Chiba, Japan)
- 2015.12, “Iron-catalyzed ortho alkylation of carboxamides with organoalane under low catalyst loading”, Presentation on the International Chemical Congress of Pacific Basin Societies (PacificChem 2015) (Honolulu, Hawaii, USA)
- 2016.03, “A Tridentate Phosphine Ligand Enabling Iron-Catalyzed Carbonyl Directed C(sp²)-H Functionalization with Trimethylaluminum”, Presentation on the 96th CSJ Annual Meeting (Kyoto, Japan)
- 2016.06, Lecture at Center of Basic Molecular Science (CBMS) of Tsinghua University, “Iron-Catalysis in Direct C-H Functionalizations: From Serendipity to Practicality” (Beijing, China)
- 2016.07, “A Tridentate Phosphine Ligand Enabling Iron-Catalyzed Carbonyl Directed C(sp²)-H Functionalization with Trimethylaluminum”, Presentation on The International Symposium on Homogeneous Catalysis (ISHC) (Kyoto, Japan)
- 2016.09, “Iron-Catalyzed Carbonyl Directed C-H Functionalization with Trimethylaluminum”, Presentation on Japan Organometallic Chemistry Symposium (Yukinto 2016) (Tokyo, Japan)
- 2016.11, “Iron-Catalyzed Carbonyl Directed C-H Methylation with Trimethylaluminum”, Presentation on the 16th Tateshina Conference

(Nagano, Japan)

- 2016.11, “Iron-Catalyzed Directed C-H Activation/C-C Couplings with Carbon Nucleophiles”, Presentation on ETHZ-UTokyo Joint Symposium of Frontier Chemistry (Tokyo, Japan)
- 2018.01, “Benzo[1,2-*b*:4,5-*b'*]dipyrrole Sulfonate Salts as Neutral Dopant-Free Hole-transporting Materials for Perovskite Solar Cells”, Presentation on CEMS International Symposium on Supramolecular Chemistry & Functional Materials 2018 (CEMSupra 2018) (Tokyo, Japan)
- 2018.01, “Benzodipyrrole Sulfonate Salts as Neutral Dopant-Free Hole-transporting Materials for Highly Efficient and Stable Perovskite Solar Cells”, Invited Poster Presentation on International Symposium on Energy Science and Technology 2018 (Okinawa, Japan)
- 2018.03, “Benzo[1,2-*b*:4,5-*b'*]dipyrrole Sulfonate Salts as Neutral Dopant-Free Hole-transporting Materials for Perovskite Solar Cells”, Presentation on the 98th CSJ Annual Meeting (Tokyo, Japan)
- 2018.04, Invited Poster Presentation “Irradiation-excited Palladium-catalysis through Blending Radical and Organometallic Reactivity” on Beilstein Organic Chemistry Symposium 2018: Photoredox Catalysis for Novel Organic Reactions (Potsdam, Germany)
2018. 05, Lecture at Department of Chemistry in Sichuan University, “Exploration of Iron-Catalyzed C-H Functionalization and Expedition in Materials Science” (Chengdu, China)
- 2018.05, “Journey from Iron Catalysis to Materials Science, and Solar Cells”, Talk at “The China-Japan Workshop for Innovations in Molecular Science and Technology” (Beijing, China)
- 2018.09, “Hybrid Benzodipyrrole Sulfonate Salt Materials in Perovskite Solar Cell Application”, Presentation at “The 29th Japan Symposium on Physical Organic Chemistry” (JPOC 2018) (Tokyo, Japan)
- 2018.09, “Iron-catalyzed Intramolecular C-O Activation Cyclization with Alkene for Indene Synthesis”, Presentation at “The 65th Japan Organometallic

- Chemistry Symposium” (Yukinto 2018) (Kyoto, Japan)
2018. 11, Poster presentation at “The 14th International Kyoto Conference on New Aspects of Organic Chemistry (IKCOC-14)” “Hybrid Benzodipyrrole Sulfonate Salt Materials in Perovskite Solar Cell Applications” (Kyoto, Japan)
2019. 03, “Hybrid Benzodipyrrole Sulfonate Salt Materials in Perovskite Solar Cell Applications”, Oral Presentation on International Symposium on Innovative Molecular Technology (ISIMT 2019) (Tokyo, Japan)
2019. 03, Invited Talk in the Advanced Technology Program (ATP) session of “The 99th (Chemical Society of Japan) CSJ Annual Meeting” “Synthetic Development of Organic Materials for Perovskite Solar Cell Applications” (Konan University, Kobe, Japan)
- 2019.07, Poster presentation at “The 18th International Symposium on Novel Aromatic Compounds (ISNA-18)” “Hybrid Materials in Perovskite Solar Cell Applications” (Sapporo, Japan)
- 2019.08, Invited Talk in Hangzhou Normal University, QinShen Lecture, “Materials for Solar Cell, and New Concept in Photocatalysis” (Hangzhou, China)
- 2019.09, Invited Talk in Sichuan University, “C-H Activation by Iron, Materials for Solar Cells, and New Concept in Photocatalysis” (Chengdu, China)
- 2019.09, Invited flash talk and poster presentation on “CCS•The 16th National Homogeneous Catalysis Conference” “Photocatalytic Decarboxylative Alkylations Mediated by PPh₃ and NaI” (Wuhan, China)
- 2020.08, Invited Talk for Summer School of South China Normal University & SongShan Lake Materials laboratory “C-H Activation by Iron and Chromium, and Materials for Solar Cells” (Online Talk)

Awards:

- 19.** 2019, “Best Youth Scholar” (Awarded by Association of Chinese Alumni in Japan)
2019, 最優秀青年学者賞 (中国留日同学会颁奖)
- 18.** 2018, “Presentation Award of the 98th CSJ Annual Meeting” (Awarded by the

Chemical Society of Japan)

- 2018, 日本化学会第98春季年会(2018)学术講演賞
- 17.** 2018, “Poster Silver Prize of International Symposium on Energy Science and Technology 2018”.
- 16.** 2016, “Springer Doctoral Theses Prize”
- 2016, Springer博士学位论文奖
- 15.** 2015, “Hundred Excellent Doctor Thesis of the Chinese Academy of Science” (Awarded by the Chinese Academy of Science)
- 2015, 中国科学院百篇优秀博士学位论文奖
- 14.** 2014, “JSPS Postdoctoral Fellowship” (Awarded by The Japan Society for the Promotion of Science)
- 2014, 日本学术振兴会外国人特别研究员
- 13.** 2014, “Student Presentation Award of the 94th CSJ Annual Meeting” (Awarded by the Chemical Society of Japan)
- 2014, 日本化学会第94春季年会(2014)学生講演賞
- 12.** 2014, “Excellent Doctor Student of Anhui Province” (Awarded by the Government of Anhui province)
- 2014, 安徽省优秀毕业生
- 11.** 2013, “Presidential Award of Chinese Academy of Science” (Special Prize)” (Awarded by the Chinese Academy of Science)
- 2013, 中国科学院院长特别奖
- 10.** 2013, “National Scholarship” (Awarded by the Chinese Government.)
- 2013, 国家奖学金
- 9.** 2012, “*Top Ten Excellent Students in Anhui Province*” (Awarded by the Government of Anhui province)
- 2012, 安徽省十佳大学生
- 8.** 2012, “*Zhu Li Yue Hua*” Scholarship for the Excellent Doctoral Student of the Chinese Academy of Science (Awarded by the Chinese Academy of Science)
- 2012, 中国科学院朱李月华优秀博士生奖学金
- 7.** 2011, the 7th National Award for Youth in Science and Technology (Awarded by the Chinese Government in the Great Hall of the People in Beijing)

- 第七届 中国青少年科技创新奖 (在人民大会堂接受颁奖并作为获奖代表发言)
6. 2011, Qiu Shi Scholarship (Awarded by Hong Kong “Qiu Shi Science & Technology Foundation”)
- 2011, 求是研究生奖学金
5. 2011, Special Prize of 12th National “Challenge Cup” (“Challenge Cup” is known as the “Olympic” event of academic science & technology for Chinese college students)
- 2011, 第十二届 “挑战杯” 全国大学生学术科技作品竞赛国家级特等奖
4. 2009, “Outstanding Student” Scholarship (Awarded by USTC)
- 2009, 中国科学技术大学优秀研究生奖学金
3. 2009, Special Prize of 11th National “Challenge Cup” (“Challenge Cup” is known as the “Olympic” event of academic science & technology for Chinese college students)
- 2009, 第十一届 “挑战杯” 全国大学生学术科技作品竞赛国家级特等奖
2. 2005, Second Class Scholarship for Outstanding Student (Awarded by USTC)
- 2005, 中国科学技术大学二等奖学金
1. 2005, Silver Medal of National Senior High School Student Chemistry Olympic Game
- 2005, 全国高中生化学奥林匹克竞赛冬令营国家级银

Research Funds

- 2014–2016 Japan Society for the Promotion of Science (JSPS), Grant-in-Aid for JSPS Fellows, Iron-catalyzed Asymmetric C-H bond Activation (鉄触媒による炭素–水素結合活性化を基軸とした触媒的不斉合成), ¥2,300,000, Principal Investigator
- 2017–2018 Japan Society for the Promotion of Science (JSPS), KAKENHI Grant-in-Aid for Young Scientists (B), Irradiation-Responsive Ligands for Efficient Iron-Catalysis, ¥4,420,000, Principal Investigator
- 2019–2021 Japan Society for the Promotion of Science (JSPS), KAKENHI Grant-in-Aid for Early-Career Scientists, Iron-catalyzed Activation of Unreactive Bonds for Organic Materials Synthesis, ¥4,160,000, Principal Investigator

2019–2024 Japan Society for the Promotion of Science (JSPS), KAKENHI Grant-in-Aid for Specially Promoted Research, Molecular electron microscopy for dynamic studies on molecules and their assemblies, ¥617,760,000, Co-Investigator

Publications (Research ID: [M-6357-2013](#))

1. Synthesis of aromatic esters via Pd-catalyzed decarboxylative coupling of potassium oxalate monoesters with aryl bromides and chlorides

Shang, R.; Fu, Y.*; Li, J. B.; Zhang, S. L.; Guo, Q. X.; Liu, L.* *J. Am. Chem. Soc.* **2009**, *131*, 5738–5739. (*highlighted by organic chemistry portal ID: J48-Y2009-1400*)

2. Copper-Catalyzed Decarboxylative Cross-Coupling of Potassium Polyfluorobenzoates with Aryl Iodides and Bromides

Shang, R.; Fu, Y.; Wang, Y.; Xu, Q.; Yu, H.-Z.; Liu, L.* *Angew. Chem. Int. Ed.* **2009**, *48*, 9350–9354.

3. Pd-catalyzed decarboxylative cross coupling of potassium polyfluorobenzoates with aryl bromides, chlorides, and triflates

Shang, R.; Xu, Q.; Jiang, Y.-Y.; Wang, Y.; Liu, L.* *Org. Lett.* **2010**, *12*, 1000–1003.

4. Theoretical analysis of factors controlling Pd-catalyzed decarboxylative coupling of carboxylic acids with olefins

Zhang, S.-L.; Fu, Y.*; **Shang, R.;** Guo, Q.-X.; Liu, L.* *J. Am. Chem. Soc.* **2010**, *132*, 638–646.

5. Palladium-catalyzed decarboxylative couplings of 2-(2-azaaryl) acetates with aryl halides and triflates

Shang, R.; Yang, Z. W.; Wang, Y.; Zhang, S. -L.; Liu, L.* *J. Am. Chem. Soc.*, **2010**, *132*, 14391–14393.

6. Synthesis of α -Aryl Nitriles through Palladium-Catalyzed Decarboxylative Coupling of Cyanoacetate Salts with Aryl Halides and Triflates

Shang, R.; Ji, D. S.; Chu, L.; Fu, Y.; Liu, L.* *Angew. Chem. Int. Ed.* **2011**, *50*, 4470–4474.

7. Palladium-catalyzed decarboxylative coupling of potassium nitrophenyl acetates with aryl halides

Shang, R.; Huang, Z.; Chu, L.; Fu, Y.; Liu, L.* *Org. Lett.* **2011**, *13*, 4240–4243.

8. Transition metal-catalyzed decarboxylative cross-coupling reactions

Shang, R.; Liu, L.* *Science China (Chemistry)*. **2011**, *54*, 1670–1687. (*Invited Review*)

9. β -Aryl Nitrile Construction via Palladium-Catalyzed Decarboxylative Benzoylation of α -Cyano Aliphatic Carboxylate Salts

Shang, R.; Huang, Z.; Xiao, X.; Lu, X.; Fu, Y.*; Liu, L. *Adv. Syn. Catal.* **2012**, *354*, 2465–2472.

10. β -Arylation of carboxamides via iron-catalyzed C (sp³)-H bond activation

Shang, R.; Ilies, L.; Matsumoto, A.; Nakamura, E.*; *J. Am. Chem. Soc.* **2013**, *135*, 6030–6032. (*Synfacts, 2013, 9(7), 0771*)

11. Copper-Catalyzed Decarboxylative Coupling of Alkynyl Carboxylates with 1, 1-Dibromo-1-alkenes

Huang, Z.; **Shang, R.;** Zhang, Z.-R.; Tan, X.-D.; Xiao, X.; Fu, Y.* *J. Org. Chem.* **2013**, *78*, 4551–4557. (*highlighted by organic chemistry portal ID: J42-Y2013*)

12. Iron-catalyzed C (sp²)-H Bond Functionalization with Organoboron Compounds

Shang, R.; Ilies, L.*; Sobi, A.; Nakamura, E.* *J. Am. Chem. Soc.* **2014**, *136*, 14349–14352. (*peer-reviewed by Nature*)

13. Conversion of Levulinate Ester and Formic Acid into γ -Valerolactone Using a Homogeneous Iron Catalyst

Fu, M.-C.; **Shang, R.;** Huang, Z.; Fu, Y.* *Synlett.(Cluster)* **2014**, *25*, 2748–2752.

14. Iron-catalyzed Directed C(sp²)-H and C(sp³)-H Functionalization with Trimethylaluminium

Shang, R.; Ilies, L.*; Nakamura, E.* *J. Am. Chem. Soc.* **2015**, *137*, 7660–7663. (*Synfacts 2015, 11(9), 0969, selected as "Synfact of the month"*)

15. Boron-Catalyzed N-Alkylation of Amine with Carboxylic Acids

Fu, M.-C.; **Shang, R.*;** Cheng, W.-M.; Fu, Y.* *Angew. Chem. Int. Ed.* **2015**, *54*, 9042–9046.

16. Room-temperature Decarboxylative Couplings of α -Oxocarboxylic acids with aryl halides by Merging Photoredox with Palladium Catalysis

Cheng, W.-M.; **Shang, R.***; Yu, H.-Z.; Fu, Y.* *Chem. Eur. J.* **2015**, *21*, 13191–13195.

17. Decarboxylative 1,4-Addition of α -Oxocarboxylic Acids with Michael Acceptors Enabled by Photoredox Catalysis

Wang, G.-Z.; **Shang, R.***; Cheng, W.-M.; Fu, Y.* *Org. Lett.* **2015**, *17*, 4830–4833.
(*highlighted by organic chemistry portal ID: J54-Y2015*)

18. Synthesis of unnatural amino acids through palladium-catalyzed C(sp³)-H functionalization

Lu, X.; Xiao, B.; **Shang, R.**; Liu, L.* *Chinese Chem. Lett.* **2016**, *27*, 305–311.

19. Nickel-Catalyzed Regio- and Stereoselective Hydrocarboxylation of Alkyne using Formic Acid through Catalytic CO Recycling

Fu, M.-C.; **Shang, R.***; Cheng, W.-M.; Fu, Y.* *ACS Catal.* **2016**, *6*, 2501–2505.

20. Iron-catalyzed ortho C–H Methylation of Aromatics Bearing a Simple Carbonyl Group with Methylaluminum and Tridentate Phosphine Ligand

Shang, R.; Ilies, L.*; Nakamura, E.* *J. Am. Chem. Soc.* **2016**, *138*, 10132–10135.

21. Iron/Zinc-Cocatalyzed Directed Arylation and Alkenylation of C(sp³)-H Bonds with Organoborates

Ilies, L.*; Itabashi, Y.; **Shang, R.**; Nakamura, E.* *ACS Catal.* **2017**, *7*, 89–92. (*Synfacts 2017*, *13(2)*, 0188)

22. Iron-Catalyzed C–H Bond Activation

Shang, R.; Ilies, L.*; Nakamura, E.* *Chem. Rev.* **2017**, *117*, 9086–9139.

23. Photoredox-Catalyzed Decarboxylative Alkylation of N-Heteroarenes with N-(Acyloxy)phthalimides

Cheng, W.-M.; **Shang, R.***; Fu, M.-C.; Fu, Y.* *Chem. Eur. J.* **2017**, *23*, 2537–2541.
(*top 20 most downloaded paper in 24 months, 2017 and 2018*)

24. Photoredox/Bronsted Acid Co-Catalysis Enabling Decarboxylative Couplings of Amino Acid and Peptide Redox Active Esters with N-Heteroarenes

Cheng, W.-M.; **Shang, R.***; Fu, Y.* *ACS Catal.* **2017**, *7*, 907–911.

25. An Efficient Pd-Catalyzed Regio- and Stereoselective Carboxylation of Allylic Alcohols with Formic Acid

- Fu, M.-C.; **Shang, R.***; Cheng, W.-M.; Fu, Y.* *Chem. Eur. J.* **2017**, *23*, 8818–8822.
- 26.** Theoretical Investigation on the Nickel-Catalyzed Hydrocarboxylation of Alkynes Employing Formic Acid
- Jiang, J.-L.; Fu, M.-C.; Li, C.; **Shang, R.***; Fu, Y.* *Organometallics*, **2017**, *36*, 2818–2825.
- 27.** Citric Acid Modulated Growth of Oriented Lead Perovskite Crystals for Efficient Solar Cells
- Guo, Y.*; Sato, W.; Shoyama, K.; Halim, H.; Itabashi, Y.; **Shang, R.**; Nakamura, E.* *J. Am. Chem. Soc.* **2017**, *139*, 9598–9604.
- 28.** Isonicotinate Ester-Catalyzed Decarboxylative Borylation of (Hetero)Arene and Alkene Carboxylic Acids through N-Hydroxyphthalimide Ester
- Cheng, W.-M.; **Shang, R.***; Zhao, B.; Xing, W.; Fu, Y.* *Org. Lett.* **2017**, *19*, 4291–4294.
- 29.** Irradiation-Induced Heck Reaction of Unactivated Alkyl Halides at Room Temperature
- Wang, G.-Z.; **Shang, R.***; Cheng, W.-M.; Fu, Y.* *J. Am. Chem. Soc.* **2017**, *139*, 18307–18312. (*JACS journal cover selected, peer-reviewed by Science, highlighted by organic chemistry portal ID: J48-Y2017*)
- 30.** Disodium Benzodipyrrole Sulfonate as Neutral Hole Transporting Materials for Perovskite Solar Cells
- Shang, R.***; Zhou, Z.-M.; Nishioka, H.; Halim, H.; Furukawa, S.; Takei, I.; Ninomiya, N.; Nakamura, E.* *J. Am. Chem. Soc.* **2018**, *140*, 5018–5022.
- 31.** Irradiation-Induced Palladium-Catalyzed Decarboxylative Heck Reaction of Aliphatic N-(Acyloxy)phthalimides at Room Temperature
- Wang, G.-Z.; **Shang, R.***; Fu, Y.* *Org. Lett.* **2018**, *20*, 888–891. (*highlighted by organic chemistry portal ID: J54-Y2018*)
- 32.** Decarboxylative Couplings of Glyoxylic Acid with Aryl Halides by Merging Organophotoredox with Palladium Catalysis
- Zhao, B.; **Shang, R.***; Cheng, W.-M.; Fu, Y.* *Org. Chem. Front.* **2018**, *5*, 1782–1786.

- 33.** Cis-Selective Decarboxylative Alkenylation of Aliphatic Carboxylic Acids with Vinyl Arenes Enabled by Ir-Photoredox/Palladium/Uphill Triple Catalysis
Zheng, C.#; Cheng, W.-M.#; Li, H.-L.; Na, R.-S.*; **Shang, R.*** *Org. Lett.* **2018**, *20*, 2559–2563. (*highlighted by Prof. Hisashi Yamamoto in Synfacts 2018, 14(11), 1148*)
- 34.** Irradiation-Induced Palladium-Catalyzed Direct C-H Alkylation of Heteroarenes with Tertiary and Secondary Alkyl Bromides
Wang, G.-Z.; **Shang, R.***; Fu, Y.* *Synthesis* **2018**, *50*, 2908–2914. (Invited contribution to Special Issue: Modern Radical Methods and their Strategic Applications in Synthesis; *Highlighted in SynForm News*)
- 35.** Iron-Catalyzed Directed Alkylation of Carboxamides with Olefins via a Carbometalation Pathway
Ilies, L.*; Zhou, Y.; Yang, H.; Matsubara, T.; **Shang, R.**; Nakamura, E.* *ACS Catal.* **2018**, *8*, 11478–11482.
- 36.** Irradiation-Induced Palladium-Catalyzed Decarboxylative Desaturation Enabled by a Dual Ligand System
Cheng, W.-M.; **Shang, R.***; Fu, Y.* *Nat. Commun.* **2018**, *9*, 5215.
- 37.** Homocoupling-free Iron-catalyzed Twofold C–H Activation/cross-couplings of Aromatics via Transient Connection of Reactants
Doba, T.; Matsubara, T.; Ilies, L.; **Shang, R.***; Nakamura, E.* *Nat. Catal.* **2019**, *2*, 400–406.
- 38.** Photocatalytic Decarboxylative Alkylations Mediated by Triphenylphosphine and Sodium Iodide
Fu, M.-C.; **Shang, R.***; Zhao, B.; Wang, B.; Fu, Y.* *Science* **2019**, *363*, 1429–1434. (*Highlighted by Prof. Varinder K. Aggarwal in SCIENCE CHINA Chemistry, 2019, 62, 1083; Highlighted by Prof. Benjamin List in Synfacts 2019, 15(07), 0791*)
- 39.** Organic/inorganic Hybrid p-Type Semiconductor Doping Enables Hole-Transporting-Layer-Free Thin-film Perovskite Solar Cells with High Stability
Zhou, Z.-M.; Qiang, Z.-Y.; Sakamaki, T.; Takei, I.; **Shang, R.***; Nakamura, E.* *ACS Appl. Mater. Interfaces.* **2019**, *11*, 22603–22611.

- 40.** Catalyst-free Decarboxylation and Decarboxylative Giese Additions of Alkyl Carboxylates through Photoactivation of Electron Donor-acceptor Complex
Zheng, C.; Wang, G.-Z.; **Shang, R.*** *Adv. Syn. Catal.* **2019**, *361*, 4500–4505. ([Top 10% Downloaded Paper 2018-2019](#))
- 41.** Palladium-Catalyzed Dual Ligand-Enabled Alkylation of Silyl Enol Ether and Enamide under Irradiation: Scope, Mechanism, and Theoretical Elucidation of Hybrid Alkyl Pd(I) Intermediate
Zhao, B.; **Shang, R.***; Wang, G.-Z.; Wang, S.; Chen, H.*; Fu, Y.* *ACS Catal.* **2020**, *10*, 1334–1343.
- 42.** Visible Light-Induced Palladium-Catalyzed Ring Opening β -H Elimination and Addition of Cyclobutanone Oxime Esters
Xing, W.-L.; **Shang, R.***; Wang, G.-Z.; Fu, Y.* *Chem. Commun.* **2019**, *55*, 14291–14294.
- 43.** Oxalic Acid Monothioester as a Synthetic Equivalent for Palladium-catalyzed Thiocarbonylation and Hydrothiocarbonylation
Zhao, B.; Fu, Y.; **Shang, R.***; *Org. Lett.* **2019**, *21*, 9521–9526. ([highlighted by organic chemistry portal ID: J54-Y2019](#))
- 44.** Chromium(III)-catalyzed C(sp²)-H Alkynylation and Allylation of Secondary Amides with Trimethylaluminum as Base
Chen, M.; Doba, T.; Sato, T.; Ilies, L.; **Shang, R.***; Nakamura, E.* *J. Am. Chem. Soc.* **2020**, *142*, 4883–4891.
- 45.** Axially Chiral Spiro-conjugated Carbon-bridged *p*-Phenylenevinylene Congeners: Synthetic Design, and Materials Properties
Hamada, H.; Itabashi, Y.; **Shang, R.***; Nakamura, E.* *J. Am. Chem. Soc.* **2020**, *142*, 2059–2067. ([highlighted by Prof. Timothy M. Swager in Synfacts 2020, 16\(04\), 0401](#))
- 46.** A cyclic phosphate-based battery electrolyte for high-voltage and safe operation
Zheng, Q.; Yamada, Y.; **Shang, R.**; Ko, S.; Lee, Y.; Kim, K.; Nakamura, E.*; and Yamada, A.* *Nat. Energy*, **2020**, *5*, 291–298.
- 47.** Photocatalytic Decarboxylative Alkenylation of α -Amino and α -Hydroxy Acid-derived Redox Active Esters by NaI/PPh₃ Catalysis

Wang, Y.-T.; Fu, M.-C.; Zhao, B.; **Shang, R.***; Fu, Y.* *Chem. Commun.* **2020**, *56*, 2495–2498.

48. Nickel-Catalyzed Carboxylation of Aryl Iodides with Lithium Formate through Catalytic CO Recycling

Wu, Y.-N.; Fu, M.-C.; **Shang, R.***; Fu, Y.* *Chem. Commun.* **2020**, *56*, 4067–4069.

49. Cobalt-Catalyzed Decarboxylative Methylation and Ethylation of Aliphatic N-(Acyloxy)phthalimides with Organoaluminum Reagents

Wang, Z.-Z.; Wang, G.-Z.; Zhang, B.; **Shang, R.***; Fu, Y.* *Synlett*, **2020**, *31*, in press. ([Highlighted in SynForm News](#))

50. Spiro-conjugated Carbon/Heteroatom-bridged *p*-Phenylenevinylenes: Synthesis, Properties, and Microcrystal Electron Crystallographic Analysis of Racemic Solid Solutions

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