Dr. Zhaofei LI

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EDUCATION

Ph.D. 09.2000 ~ 07.2005, Inorganic Chemistry

College of Chemistry and Molecular Engineering, **Peking University**, Beijing, China.

Supervisor: Prof. Jianhua Lin

Dissertation: Synthesis and Properties of Solid State Oxides with Perovskite and Perovskite Related Structures

B. Sc. 09.1996 ~ 07.2000, Inorganic Chemistry

College of Chemistry and Molecular Engineering, **Peking University**, Beijing, China.

Supervisor: Prof. Jianhua Lin

Thesis: Synthesis and Electrochemical Properties of K_2FeO_4

RESEARCH INTERESTS

- Heterogeneous catalysis and their applications in petrochemical field
- Preparations, characterizations and applications of inorganic materials
- Crystallography and structural study for new materials
- Optimizations on functional materials from structural point of view
- Solid state materials and their physical properties

PROFESSIONAL EXPERIENCES

07.2019~present

Research Associate with Prof. Hua Song at GCRG, University of Calgary

Mainly work on heavy oil upgrading with methane

12.2010~present

Senior Engineer, Petrochemical Research Institute of PetroChina, China.

Mainly work on Zeolite and porous materials, FCC catalyst, synthesis and applications of catalytic materials, and their scale up

07.2009 ~ 10.2010

Research Associate and Assistant Professor with Prof. Mikio Takano, WPI-iCeMS, Kyoto University, Japan.

Mainly work on the nano-sized transition metal oxides and their catalytic properties as well as low temperature topotactic reaction for novel materials.

10.2007 ~ 06.2009

Postdoctoral Researcher and Research Associate with Prof. Katsumi Tanigaki, Department of Physics and WPI-AIMR, Tohoku University, Japan.

Mainly worked on the Fe-based superconductivity materials and clathrates.

12.2005 ~ 04.2007

Postdoctoral researcher with Prof. Dr. Hermann Gies, Institute for Geology, Mineralogy and Geophysics, Ruhr University Bochum, Germany.

Mainly worked on the hydrothermal synthesis and structures of layered silicates.

07.2000 ~ 11.2005

Research Assistant with Prof. Jianhua Lin, Peking University, China.

09.2001 ~ 01.2002

Teaching Assistant, Peking University, China.

Direct the undergraduate students in Physical Chemistry.

02.2000 ~ 07.2000

Teaching Assistant, Peking University, China.

Direct the undergraduate students in Inorganic Materials Chemistry.

RESEARCH EXPERIENCES

- Preparations and applications on FCC catalyst and related catalytic materials such as molecular sieves, Alumina. Etc.
- Preparations and applications on hydro-treating catalysts
- Catalytic studies on heavy oils conversion.
- Inorganic and solid-state synthesis for new materials and their characterizations
- Low temperature solid state reaction and topotactic reaction for exotic inorganic materials with novel structures.
- Inorganic Nano-materials synthesis and their catalytic properties.
- Hydrothermal synthesis of hydrous layered silicate and porous materials.
- Synthesis by rational design of oxides with perovskite and related structures.
- Structure determination by X-ray powder diffraction techniques combined with Electron Diffraction, HRTEM and Neutron Diffraction.

- Studies on magnetic, electrical and ionic conductivity, superconductivity, dielectric and optical properties etc.
- Study on the relationship between structures and their electrical and magnetic properties.
- Properties optimization from structure point of view.

AWARDS

- Young talented researcher of PetroChina

PUBLICATIONS

- More than 40 peer-reviewed papers.
- Applied 26 Chinese patents with 11 authorized.
- More than 15 conference presentations.

Publications list

- Yi Lu, Xiu Chenga, Ge Tian, Heng Zhao, Li He, Jie Hu, Si-Ming Wu, Ying Dong, GangGang Chang, Silvia Lenaerts, Stéphane Siffert, Gustaaf Van Tendeloo, **Zhaofei Li,** LingLing Xu, XiaoYu Yang*, Baolian Su* "Hierarchical CdS/m-TiO2/G ternary photocatalyst for highly active visible light-induced hydrogen production from water splitting with high stability", *Nano Energy*, 47, 8–17, (2018)
- Jie Ying, Annika Herbst, YuXuan Xiao, Hao Wei, Ge Tian, **Zhaofei Li**, XiaoYu Yang, BaoLian Su* and Christoph Janiak* "Nanocoating of Hydrophobic Mesoporous Silica around MIL-101Cr for Enhanced Catalytic Activity and Stability", *Inorganic Chemistry*, 57, 899−902, (2018)
- Guo Guangjuan, Liu Qiwu, Guo Chengyu, Xing Xin, **Li Zhaofei,** Wang Qian, Pang Xinmei, Li Fayong, Yan Lijun, "Research Progress of Octane Enhancing Additives for Fluid Catalytic Cracking Process", *Contemporary Chemical Industry*, 46(9), 1879-1882, (2017)
- Hu Yunfeng, v Zhongyuan, Su Xunming, **Li Zhaofei**, Yan LiJun, "Synthesis of SAPO-18 for High Propylene Selectivity in 1-Butene Catalytic Cracking", *Acta Petrolei Sinica*（*Petroleum Processing Section*）, 33(1), 150-156, (2017)
- Xing Xin, **Li Zhaofei**, Guo Chengyu, Wang Qian, Liu Qiwu, Hu Sheng, Pang Xinmei* Li Fayog, Yan Lijun, "Synthesis Methods of Nano-sized MoS_2 and its application in heavy oil hydroconversion", *Materials Review*, 30(11), 49-54, (2016)
- Niu Wenjun, Dong Hexin, Han Li, Wang Jianfeng, Zhan Yuzhong, **Li Zhaofei**, Yan Lijun, Yue Xianglong and Wang Zheng, "Synthesis and catalytic performances in the MTO process of SAPO-18", *Computer and Applied chemistry*, 33(9), 949-954, (2016)

- Guo Chengyu, Cui Yan, Wang Qian, Xing Xin, **Li Zhaofei**, Liu Qiwu, Pang Xinmei, Li Fayong, Yan ijun, "Synthesis progress of micro/meso-porous zeolite materials", *Science & Technology in Chemical Industry*, 26(2), 67-72, (2016)
- Pang Xinmei, Liu Qiwu, Wang Xiaohua, Cui Yan, Xing Xin, Guo Chengyu, Wang Qian, **Li Zhaofei,** Li Fayong, "FCC reaction performance using β zeolite catalysts synthesized by various methods", *CIESC Journal*, 67(8), 345-3421, (2016)
- **Li Zhaofei**，Guo Chengyu，Wang Qian，Liu Qiwu，Xing Xin，Hu Yunfeng, "Synthesis of ZSM-5 zeolites with different silica-alumina ratio and their application in catalytic cracking of 1-butene", *Petrochemical Technology*, 45(2), 163-168, (2016)
- Jie Liang, Jie Su, Yanping Chen, **Zhaofei Li**, Kuo Li, Hao Zhang, Xiaodong Zou, Fuhui Liao, Yingxia Wang* and Jianhua Lin*, "Syntheses, structure solutions, and catalytic performance of two novel layered silicates", *Dalton Transactions*, 44, 15567-15575, (2015)
- Li Manzhi, Xu Jun, Han Li, Chen Yiliang, **Li Zhaofei**, Yan Lijun, "Study of synthesis, characterization and atalytic performance of SAPO-17 molecular seives", *New Chemical Materials*, 43(4), 166-168, (2015)
- Wang Qian, Liu Qiwu, **Li Zhaofei**, Xue Teng, Wang Yimeng, Yan Lijun, Pang Xinmei, "Influence of particle size of ZSM-5 molecular sieves on the selectivity of Propylene", *Industrial Catalysis*, 23(8), 614-618, (2015)
- Liu Qiwu, Sun Dejian, Wang Qian, Guo Chengyu, Xing Xin, **Li Zhaofei**, "Application of ZSM-5 with high silica-alumina ratio in Octane enhancing additive", *Industrial Catalysis*, 23(7), 545-548, (2015)
- Xu Jun，Li Manzhi，Han Li，Chen Yiliang，**Li Zhaofei**，Yan Lijun, "Synthesis of SAPO-1 7 Molecular Sieve and Its Catalytic Performance in Methanol to Olefins Reaction", *Joumal of zhengzhou university(Engineering Science)*, 35(2), 83-87, (2014)
- **Li Zhaofei**, Liu Qiwu, Wang Qian, Xue Teng, Wang Yimeng, Yan Lijun, Pang Xinmei, "synthesis and catalytic cracking performance of ZSM-5 with controlled morphology and different silica-alumina ratio", *Industrial Catalysis*, 22(3), 215-220, (2014)
- Liu qiwu, Wang Wenqing, Pang Xinmei, Wang Xiaohua, Sun Songrong, Li Zhaofei, Wang qian, Yan Lijun, "Catalytic cracking performance of beta zeolite with different silica-alumina ratio", *Industrial Catalysis*, 22(2), 102-106, (2014)
- Piao Jiarui, Wang Qian, Liu Qiwu, **Li Zhaofei**, Wang Xiaohua, Pang Xinmei, "Progress in reducing Nitrogen oxides emission by catalysis processes" *Petrochemical Technology and Applications*, 31, 74-77, (2013)
- Yao Xiaoqiang, Xu Xiangyu, Lv Zhi, Jiao Kun, Song Jiaqing*, **Li ZhaoFei**, Wang Qian, Yan Lijun, He Mingyuan, "Synthesis of Plate Like Silicalite-1 with Controlled Thickness", *Acta Physico-chimica Sinica*, 29 (8), 1809-1813, (2013)
- Yoji Kobayashi, **Zhaofei Li**, Kei Hirai, Cédric Tassel, François Loyer, Noriya Ichikawa, Naoyuki Abe, Takafumi Yamamoto , Yuichi Shimakawa, Kazuyoshi Yoshimura, Mikio Takano, Olivier J. Hernandez, Hiroshi Kageyama*, "Gas phase

contributions to topochemical hydride reduction reactions", *Journal of Solid State Chemistry*, 207, 190-193, (2013)

- Jiaqing Song*, Zhenhu Li, Xiangyu Xu, Mingyuan He, **Zhaofei Li**, Qian Wang, Lijun Yan, "Organic-free Synthesis of Boehmite Nanofibers by $Al_2(SO_4)_3 \cdot 18H_2O$ with High Pore Volume", *Industrial & Engineering Chemistry Research*, 52, 7752-7757, (2013)
- Jiechen Kong, Lei Jiang, Zhiping Huo, Xiangyu Xu, David G. Evans, Jiaqing Song*, Mingyuan He, **Zhaofei Li**, Qian Wang, Lijun Yan, "Influence of the preparation process on the performance of three hydrotalcite-based De-SOx catalysts", *Catalysis Communications*, 40, 59-62, (2013)
- Zhiping Huo, Xiangyu Xu, Zhi Lv, Jiaqing Song*, Mingyuan He, **Zhaofei Li**, Qian Wang, Lijun Yan, Yang Li, "Thermal study of NaP zeolite with different morphologies", *Journal of Thermal Analysis and Calorimetry*, 111, 365-369, (2013)
- Lingli Peng, Xiangyu Xu, Zhi Lv, Jiaqing Song*, Mingyuan He, Qian Wang, Lijun Yan, Yang Li, **Zhaofei Li**, "Thermal and morphological study of Al_2O_3 nanofibers derived from boehmite precursor", *Journal of Thermal Analysis and Calorimetry*,110(1), 749-754, (2012)
- Yoji Kobayashi, Olivier J. Hernandez, Tatsunori Sakaguchi, Takeshi Yajima, Thierry Roisnel, Yoshihiro Tsujimoto, Masaki Morita, Yasuto Noda, Yuuki Mogami, Atsushi Kitada, Masatoshi Ohkura, Saburo Hosokawa, **Zhaofei Li**, Katsuro Hayashi,Yoshihiro Kusano, Jung eun Kim, Naruki Tsuji, Akihiko Fujiwara, Yoshitaka Matsushita, Kazuyoshi Yoshimura, Kiyonori Takegoshi, Masashi Inoue, Mikio Takano and Hiroshi Kageyama*, "An oxyhydride of BaTiO3 exhibiting hydride exchange and electronic conductivity", *Nature Materials*, 141(6), 507-511, (2012)
- Zhiping Huo, Xiangyu Xu, Zhi Lv, Jiaqing Song*, Mingyuan He, Zhaofei Li, Qian Wang, Lijun Yan, "Synthesis of zeolite NaP with controllable morphologies", *Microporous and Mesoporous Materials*, 158, 137-140, (2012)
- Chunhai Wang, Dongfang Guo, **Zhaofei Li**, Xiaoming Wang, Jianhua Lin, Zhengzhi Zeng , Xiping Jing*, "Crystal structure of $Sr_6Y_2Al_4O_{15}$: XRD refinements and first-principle calculations", *Journal of Solid State Chemistry*, 192, 195-200, (2012)
- Li Jia, Jincheng Xie, Juan Zhang, Haoling Sun*, **Zhaofei Li**,"1D Metal-Pyrimidine chain with antiferromagnetic coupling and spin-canting behavior", *Inorganic Chemistry Communications*, 16, 33-36, (2012)
- Min Yang, Kuo Li, Jie Su, Q. Huang, Wei Bao, Liping You, **Zhaofei Li**, Yingxia Wang*, Yu Jiang, Fuhui Liao ane Jianhua Lin*, "Study on the crystal structure of the rare earth oxyborate $Yb_{26}B_{12}O_{57}$ from powder X-ray and neutron diffraction", *Journal of Alloys and Compounds*, 509, 4707-4713, (2011)
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Masahiko Isobe, Yutaka Ueda, Kenji Ohoyama, Kazuyoshi Yoshimura, Yoji Kobayashi and Hiroshi Kageyama*, "Synthesis and Thermal Stability of the Solid Solution $AFeO_2$ (A=Ba, Sr, Ca)", *Inorganic Chemistry*, 49, 5957-5962, (2010)

- **Zhaofei Li**, Jun Tang, Takuya Nishino, Kazumi Sato, Yan Wang and Katsumi Tanigaki*, "Carrier control in $Ba_8Ga_{16}Ge_{30}$ single crystals", *Physica C: Superconductivity and its Applications*, 470, S616-S618, (2010)
- Jun Tang, Kazumi Sato, **Zhaofei Li** and Katsumi Tanigaki*, "Superconductivity in Silicon and Germanium Polyhedra", *Physica C: Superconductivity and its Applications*, 470, S622-S624, (2010)
- **Zhaofei Li**, Jing Ju, Jun Tang, Kazumi Sato, Masanori Watahiki and Katsumi Tanigaki*, "Structural and superconductivity study on α-$FeSe_x$", *Journal of Physics and Chemistry of Solids*, 71, 495-498, (2010)
- Jun Tang*, **Zhaofei Li**, Takuya Nishino, Kazumi Sato and Katsumi Tanigaki, "Carrier-tuning of type-I clathrate single crystals", *Journal of Physics and Chemistry of Solids*, 71, 480-482, (2010)
- Jing Ju, Khuong Huynh, Jun Tang, **Zhaofei Li**, Masanori Watahiki, Kazumi Sato, Hidenori Terasaki, Eiji Ohtani, Hirosuge Takizawa and Katsumi Tanigaki*, "Superconducting properties of $SmFeAsO_{1-x}$ prepared under high-pressure condition" , *Journal of Physics and Chemistry of Solids*, 71, 491-494, (2010)
- Y. Wang*, R. Kumashiro, **Z. Li,** R. Nouchi and K. Tanigaki, "Light emitting ambipolar field-effect transistors of 2,5-bis(4-biphenyl)bithiophene single crystals with anisotropic carrier mobilities", *Applied Physics Letters*, 95, 103306 (2009)
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- Jun Tang, Ryotaro Kumashiro, Jing Ju, **Zhaofei Li**, M. A. Avila, K. Suekuni, T. Takabatake, F. Guo, K. Kobayashi and K. Tanigaki*, "p- and n-type $Ba_8Ga_{16}Ge_{30}$ stydied by X-ray photoelectron spectroscopy", *Chemical Physics Letters*, 472, 60 (2009)
- Jun Tang, **Zhaofei Li**, Jing Ju, Ryotaro Kumashiro, M. A. Avila, K. Suekuni, T. Takabatake, F. Guo, K. Kobayashi, K. Akai and K. Tanigaki*, "Soft X-ray Photoelectron spectroscopy study of type-I clathrates", *Science and Technology of Advanced Materials*, 9, 044207 (2008)
- **Zhaofei Li**, Bernd Marler, Hermann Gies*, "A new layered silicate with structural motives of silicate zeolites: synthesis, crystals structure and properties", *Chemistry of Materials*, 20, 1896 (2008)
- Junliang Sun, Guobao Li, **Zhaofei Li**, Liping You, Jianhua Lin*, "Crystal growth and structure determination of Oxygen-deficient $Sr_6Co_5O_{15}$", *Inorganic Chemistry*, 45, 8394 (2006)

- **Zhaofei Li**, Guobao Li, Junliang Sun, Yingxia Wang, Liping You, Jianhua Lin*, "Structural and magnetic properties of Ruddlesden–Popper compounds in a double-perovskite family $Sr_n(Fe,Ta)_nO_{3n}(SrO)$", *Solid State Sciences*, 8, 1035 (2006)
- **Zhaofei Li**, Junliang Sun, Liping You, Huan Jiao, Guobao Li, Xiping Jing, Fuhui Liao, Jianhua Lin*, "Phase Equilibrium of the In_2O_3-TiO_2-MO (M = Ca, Sr) Systems and the Structure of $In_6Ti_6CaO_{22}$", *Chemistry of Materials*, 17, 2186 (2005)
- **Zhaofei Li**, Guobao Li, Junliang Sun, Liping You, Yingxia Wang, Fuhui Liao and Jianhua Lin*, "Structure and properties of the n=2 Ruddlesden-Popper phase Sr_3FeMoO_7", *Journal of Solid State Chemistry*, 178, 3315 (2005)
- **Zhaofei Li**, Junliang Sun, Yingxia Wang, Liping You and Jianhua Lin* "Structural and magnetic properties of $Ba_3La_3Mn_2W_3O_{18}$", *Journal of Solid State Chemistry*, 178, 114 (2005)
- **Zhaofei Li**, Junliang Sun, Liping You, Yingxia Wang and Jianhua Lin*, "Synthesis and Crystal Structure of $Ba_2La_2MnW_2O_{12}$", *Journal of Alloys and Compounds*, 379, 117 (2004)
- Feng Luo, Wei Song, **Zhaofei Li**, and Chun-Hua Yan*, "Synthesis and magnetic properties of $CeVO_3$ nanostructures", *Solid State Communications*, 132, 595 (2004)
- **Zhaofei Li**, Guobao Li, Fuhui Liao and Jianhua Lin*, "On the Synthesis of $LaCaGaO_4$", *Journal of Solid State Chemistry*, 172, 59 (2003)