

# Personal profile of Professor Luzheng Chen

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## Basic information:



**Name:** Luzheng Chen

**Title:** Professor, Ph.D. Supervisor

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**Research interests:** high gradient magnetic separation

## Education and academia records:

1997.09-2001.06, Bachelor in Mineral Processing Engineering, Jiangxi University of Science and Technology.

2001.09-2004.06, Master in Environmental Engineering, Harbin Institute of Technology.

2004.09-2008.06, PhD in Environmental Engineering, Harbin Institute of Technology.

2001.09-2008.06, Academic research in SLon Magnetic Separator Ltd. as master and PhD student.

2008.08-2013.07, Lecturer in the Department of Mineral Processing Engineering, Kunming University of Science and Technology.

2013.08-2017.02, Professor in the Department of Mineral Processing Engineering, Kunming University of Science and Technology (exceptional promotion as outstanding young scholars).

2017.03-present, Professor, doctoral and post-doctoral co-supervisor in the department of Mineral Processing Engineering, Kunming University of Science and Technology.

2017.11-2018.10, Visiting professor in Chemical Engineering, the University of Newcastle, Australia.

## Research projects:

1, National Natural Foundation of China, Optimum arrangement and separation mechanism of rod matrix using Slice Matrix Modules, 51104076, 2012-2014, Project leader.

2, National Natural Foundation of China, Size matching and configuration mechanism of combinative rod matrix in high gradient magnetic separation, 51564028, 2016-2019, Project leader.

3, National Natural Foundation of China, The new capture characteristics and its high-selective separation mechanism of dynamic matrix, 51874152, 2019-2022, Project leader.

4, National Natural Foundation of China, Centrifugal separation characteristics and mechanism in cyclone fluidization for fine hematite, 51564028, 2015-2018, Principal participant.

5, Research Fund for the Doctoral Program of Higher Education of China, Optimum arrangement of rod matrix in high gradient magnetic separation process, 20115314120006, 2012-2014, Project leader.

6, Talent Training Program from Science and Technology Department of Yunnan province. Training project for young and middle-aged academic and technological leaders of Yunnan Province. 2017HB012, 2017-2021, Project leader.

- 7, Key Program for Applied Basic Research from Science and Technology Department of Yunnan province, Fundamental research on synergistic separation of weakly magnetic ores in coupled centrifugal and high gradient magnetic fields, 2015FA051, 2016-2019, Project leader.
- 8, High-level Talent Recruitment Program of Yunnan province (Key Project), Development and application of environmentally green reagents for effective utilization of low-quality mineral resources, CCC21321005A, 2021-2023, Project leader.
- 9, Innovative Fund for Applied Basic Research from Science and Technology Department of Yunnan province, Development and application of large-scale PBC high gradient magnetic separator, 2017EH090, 2017-2019, Project leader.
- 10, The Yangtze River Scholar Program in Kunming University of Science and Technology, 109720190145, 2020-2022, Cooperative Professor.
- 11, Innovative Development Program for Major Technical Equipment Innovation and Industrialization of Sichuan province, Development of centrifugal high gradient magnetic separation and its equipment development, 2014ZZ059, 2014-2017, Project leader.
- 12, Research program of Science and Technology Department of Sichuan province, Industrial demonstration application of centrifugal high gradient magnetic separation technology for high effective separation of fine ilmenite ore, 2018GZYZF0057, 2019-2021, Project leader.
- 13, Technological commission project from SPIC Aluminum & Power Investment Co. Ltd., Magnetic separation technology development for quality promotion of Guinea high-iron bauxite ore, SPICG-FW-2020-028, 2020-2021, Project leader.
- 14, Technological commission project (Key Scientific and Technological Program of Yunnan Copper Co., Ltd.) from Yunnan Diqing Non-ferrous Metals Industry Co. Ltd., Key technology development for magnetic pre-concentration and flotation separation of fine mixed chalcopyrite-molybdenite concentrate, DQYS-SCB09-(2020)001, 2020-2021, Project leader (responsible for magnetic pre-concentration).
- 15, Technological commission project (Key Scientific and Technological Program of Yunnan Copper Co., Ltd.) from Yunnan Diqing Non-ferrous Metals Industry Co. Ltd., Key technology development of expanded industrial trial for magnetic separation of fine mixed chalcopyrite-molybdenite concentrate, DQYS-XKC-09-(2021)008, 2021-2022, Project leader.
- 16, Technological commission project from Yunnan Heqing-beiya Mining Co. Ltd. of Yunnan Gold Mining Group Co. Ltd., Technological development for experimental siderite recovery from tailings and production of siderite concentrate from the second processing plant in Yunnan Heqing-beiya Mining Co. Ltd., 2021, Project leader.
- 17, Technological commission project from Yunnan Heqing-beiya Mining Co. Ltd. of Yunnan Gold Mining Group Co. Ltd., Key technology for iron recovery by magnetic separation from cyanide leaching residue of the first processing plant in Yunnan Heqing-beiya Mining Co. Ltd., 2020-2022, Project leader.
- 18, Technological commission projects from other enterprises around 20, 2008-present, Project leader.

## Representative awards:

- 1, First Prize of China Nonferrous Metals Industry Science and Technology, Key technology and industrial application of large and low-cost high-intensity high gradient magnetic separators; Individuals ranking: Dahe Xiong, **Luzheng Chen**, Xiangjun Ren, Jian Chen, Zeping Li, etc.; Affiliations ranking: **Kunming University of Science and Technology**, SLon Magnetic Separator Co. Ltd., Ganzhou Nonferrous Metallurgy Research Institute Co. Ltd.

## Featured patents:

- 1, National invention patent, Electromagnetic field centrifugal high gradient magnetic separator, Application No.: 202010253142.4; **Luzheng Chen**, Jianwu Zeng, Tao Xiong.
- 2, National invention patent, A cyclic permanent-magnet centrifugal high gradient magnetic separator, Authorization No.: ZL 2016 1 0332423.2; **Luzheng Chen**, Ruoyu Yang, Changping Guan, Yongming Deng, Guodong Xu.
- 3, National invention patent, Centrifugal high gradient magnetic separation method, Authorization No.: ZL 201010203774.6.; **Luzheng Chen**.
- 4, National invention patent, Periodic pulsating and vibrating high gradient magnetic separator, Application No.: 202011202238.4; Tao Xiong, Xiangmin Liu, **Luzheng Chen**, Yuhuan Li, Xiangjun Ren, Huichun Huang, Meifang Xie, Kai Liu, Yuqin Huang, Zhenhong Cui.
- 5, National invention patent, A method for separation of weakly magnetic minerals from mica, Authorization No.: ZL 201510412727.5; **Luzheng Chen**, Zhicheng You, Haiyun Xie, Yongming Zheng, Jianwu Zeng.
- 6, National invention patent, Slice Matrix Analysis Method for combinatorial optimization of matrix. Authorization No.: ZL 20121 0074235.6; **Luzheng Chen**.
- 7, National invention patent, An experimental method for capture characteristics analysis of single magnetic wire, Authorization No.: ZL 201610574053.3; **Luzheng Chen**, Wenbo Liu, Xiong Tong, Ruijie Wang.
- 8, National invention patent, A wear-resistant and three-conical drum for centrifugal separator, Authorization No.: ZL 20191022606.X. **Luzheng Chen**, Dahe Xiong, Huichun Huang, Zheng Peng, Tao Xiong, Yuhuan Rao, Jianwu Zeng.
- 9, National invention patent, A short new flowsheet for high-effective separation of ultra-fine tin minerals with centrifugal separator, Authorization No.: ZL 201910320359.X; Tao Xiong, **Luzheng Chen**, Tingsheng Qiu, Huichun Huang, Xiangjun Ren, Jianwu Zeng, Zheng Peng, Meifang Xie.
- 10, National invention patent, A new flowsheet for high-effective separation of ultra-fine tungsten minerals with centrifugal separation and flotation, Authorization No.: ZL 201910320353.2; Tao Xiong, **Luzheng Chen**, Xiangjun Ren, Tingsheng Qiu, Huichun Huang, Jianwu Zeng, Zheng Peng, Meifang Xie.
- 11, National invention patent, A comprehensive utilization method for separation of spodumene, Authorization No.: ZL 201910241879.1; Yuhuan Rao, Dahe Xiong, **Luzheng Chen**, Zeping Li,

Huichun Huang, Hua Li, Xiangjun Ren, Yongping Wang, Jian Chen.

- 12, National invention patent, An industrial production method for separation of fine mixed chalcopyrite-molybdenite concentrate using pulsating high gradient magnetic separation technology, Application No.: 202011554804.8; Jianguo Zhang, **Luzheng Chen**, Ruoyu Yang, Tao Xiong, Yuanlun Peng, Yanhai Shao, Bo Zheng, Jianwu Zeng, Dongliang Sun, Bohua Zhang.
- 13, National invention patent, A magnetic separation method for upgrading high-iron and low-grade bauxite ore, Application No.: 202110369416.0; **Luzheng Chen**, Fan Yi, Feng Liu, Xiaohu Zhang, Tao Xiong, Xiangjun Ren, Jinyue Xu, Rui Li, Keyi Wang, Changrong Liu, Liangfa Xu, Mingpeng Zhan.

### Featured publications:

- 1, **Luzheng Chen\***. Effect of magnetic field orientation on high gradient magnetic separation performance. *Minerals Engineering*. 2011, 24 (1): 88~90.
- 2, **Luzheng Chen\***, Li Ding, Jianxiong Huang. Slice Matrix Analysis for combinatorial optimization of rod matrix in PHGMS. *Minerals Engineering*. 2014, 58: 106~109.
- 3, **Luzheng Chen\***, Jianwu Zeng, Changping Guan, Ruoyu Yang. High gradient magnetic separation in centrifugal field. *Minerals Engineering*. 2015, 78: 122~127.
- 4, Jianwu Zeng, Xiong Tong, Peng Ren, **Luzheng Chen\***. Theoretical description on size matching for magnetic element to independent particle in high gradient magnetic separation. *Minerals Engineering*. 2019, 135: 74~82.
- 5, Jianwu Zeng, Xiong Tong, Dongxia Feng, Changping Guang, **Luzheng Chen\***. Highly selective capture characteristics of magnetic wires in CHGMS method. *Minerals Engineering*. 2020, 149: 106243.
- 6, **Luzheng Chen**, Tao Xiong, Dahe Xiong, Ruoyu Yang, Yuanlun Peng, Yanhai Shao, Jinyue Xu, Jianwu Zeng\*. Pulsating HGMS for industrial separation of chalcopyrite from fine copper-molybdenun co-flotation concentrate. *Minerals Engineering*. 2021, 170: 106967.
- 7, Yongjun Xian, Yang Hong, Yirong Li, Xiaowei Li, Song Zhang, **Luzheng Chen\***. Pulsating high gradient magnetic separation of chalcopyrite and talc. *Minerals Engineering*. 2022.
- 8, Fan Yi, **Luzheng Chen\***, Jianwu Zeng, Xiangjun Ren, Tao Xiong, Yaxiong Jiang. Rotating flow characteristics in centrifugal high gradient magnetic separation and its effect on particle capture behavior. *Minerals Engineering*. 2022.
- 9, **Luzheng Chen\***, Nanqi Ren, Dahe Xiong. Experimental study on performance of a continuous centrifugal concentrator in reconcentrating fine hematite. *International Journal of Mineral Processing*. 2008, 87(1-2): 9~16.
- 10, **Luzheng Chen\***, Guoping Liao, Zhihua Qian, Jian Chen. Vibrating high gradient magnetic separation for purification of iron impurities under dry condition. *International Journal of Mineral Processing*. 2012, 102-103: 136~140.
- 11, **Luzheng Chen\***, Ruoyu Yang, Jianwu Zeng, Yanhai Shao, Qingfei Xiao. A wet belt permanent high

- gradient magnetic separator for purification of non-metallic ores. *International Journal of Mineral Processing*. 2016, 153: 66~70.
- 12, Jianwu Zeng, **Luzheng Chen\***, Ruoyu Yang, Xiong Tong, Peng Ren, Yongming Zheng. Centrifugal high gradient magnetic separation of fine ilmenite. *International Journal of Mineral Processing*. 2017, 168: 48~54.
- 13, **Luzheng Chen\***, Wenbo Liu, Jianwu Zeng, Peng Ren. Quantitative investigation on magnetic capture of single wires in pulsating HGMS. *Powder Technology*. 2017, 167: 54~59.
- 14, Jianwu Zeng, Xiong Tong, Guodong Xu, Fan Yi, **Luzheng Chen\***. Comparative magnetic capture characteristics of revolving and spinning wires in uniform magnetic field. *Powder Technology*. 2020, 363: 161~168.
- 15, **Luzheng Chen**, Yongming Zheng, Jianwu Zeng, Jian Liu\*. Magnetic field characteristics of wet belt permanent high gradient magnetic separator and its full-scale purification for garnet ore. *IEEE Transactions on Magnetics*. 2017, 53 (9): 1~5.
- 16, Haiyun Xie, Rui Sun, Xiangjun Ren, Yanhao Liu, Dongxia Feng\*, **Luzheng Chen\***. Development of a new Fluidized Hydrocyclone Concentrator for mineral separation. *Separation and Purification Technology*. 2020, 248: 116960.
- 17, Jianwu Zeng, Xiong Tong, **Luzheng Chen\***. Selective capture of magnetic wires to particles in high gradient magnetic separation. *Minerals*. 2019, 9, 509; doi: 10.3390/min9090509.
- 18, Tao Xiong, Xiangjun Ren, Meifang Xie, Yuhuan Rao, Yongjun Peng, **Luzheng Chen\***. Recovery of ultra-fine tungsten and tin from slimes using large-scale SLon-2400 centrifugal separator. *Minerals*. 2020, 10, 694; doi: 10.3390/min10080694.
- 19, **Luzheng Chen\***, Qian Zhihua, Shuming Wen, Songwei Huang. High gradient magnetic separation of ultrafine particles with rod matrix. *Mineral Processing and Extractive Metallurgy Review*. 2013, 34 (5): 340~347.
- 20, **Luzheng Chen\***, Shuming Wen, Guodong Xu, Haiyun Xie. A novel process for titanium sands by magnetic separation and gravity concentration. *Mineral Processing and Extractive Metallurgy Review*. 2013, 34 (3): 139~150.
- 21, Peng Ren, **Luzheng Chen\***, Wenbo Liu, Yanhai Shao, Jianwu Zeng. Comparative investigation on magnetic selectivity between single wires and a real matrix. *Results in Physics*. 2018, 8: 180~183.
- 22, Jingyue Xu, Dahe Xiong, Shaoxian Shong\*, **Luzheng Chen\***. Superconducting pulsating high gradient magnetic separation for fine weakly magnetic ores: cases of kaolin and chalcopyrite. *Results in Physics*. 2018, 10: 837~840.
- 23, Fan Yi, **Luzheng Chen\***, Jianwu Zeng, Guifang Deng, Guoyin Xu. Numerical simulation for dynamic magnetic capture of rotating wire in centrifugal high gradient magnetic separation. *Chinese Journal of Rare Metals*. 2020, 44 (11): 1184~1190. in Chinese
- 24, Tao Xiong, Meifang Xie, **Luzheng Chen\***, Huichun Huang, Jianwu Zeng. Experiment and application of pulsating high gradient magnetic separation of large particle matrix for titanium placer

- in Yunnan. Nonferrous Metals (Mineral Processing Section). 2021, 5: 33~37. in Chinese
- 25, Bohua Zhang, Yanhai Shao, Tao Xiong, Jianwu Zeng, Ruoyu Yang, Peichun Sun, Changping Guan, **Luzheng Chen\***. SLon-500 magnetic separator for separation of chalcopyrite from fine copper-molybdenum concentrate. Nonferrous Metals (Mineral Processing Section). 2022. in Chinese
- 26, **Luzheng Chen\***, Nanqing Ren, Dahe Xiong. Test research on reconcentration of Hainan steels tailings by high intensity magnetic separation-centrifugal separator. Metal Mine. 2006, 10: 75~77. in Chinese
- 27, **Luzheng Chen\***, Guoping Liao, Guodong Xu, Zhihua Qian. Process research of a low grade titanium sand. Metal Mine. 2011, 5:93~95,105. in Chinese
- 28, Jianwu Zeng, **Luzheng Chen\***, Li Ding, Huifen Zhang. Effect of rod matrix arrangement on pulsating high gradient magnetic separation performance. Metal Mine. 2015, 3: 161~164. in Chinese
- 29, Peichun Sun, **Luzheng Chen\***, Tao Xiong, Huichun Huang, Hua Li, Zhenfei Li. Application of SLon centrifugal separators in recovering tungsten slime in Jiangxi province. Metal Mine. 2020, 7: 94~98. in Chinese
- 30, Fan Yi, **Luzheng Chen\***, Tao Xiong, Huichun Huang, Hua Li, Zhenfei Li. Industrial test of separating fine-grained tungsten-tin slime by SLon centrifugal separator. China Tungsten Industry. 2019, 34 (4): 26~31. in Chinese
- 31, Chao Li, **Luzheng Chen\***, Jianwu Zeng, Tao Xiong, Fei Tao. Matrix capture characteristics for chalcopyrite and molybdenite and its pulsating high gradient magnetic separation. China Tungsten Industry. 2022. in Chinese
- 32, Tao Xiong, **Luzheng Chen\***, Meifang Xie, Bingjun Lü, Yongping Wang. Iron removing research and application of SLon HGMS in spodumene. Non-Metallic Mines.2020, 43 (6): 46~48. in Chinese
- 33, Wang Zedong, **Luzheng Chen\***, Jing Li, Pulin Dai, Keyi Wang, Changrong Liu, Mingpeng Zhan, Jianwu Zeng, Tao Xiong. Experimental research on upgrading a high-iron and low-grade bauxite ore from Guinea with magnetic separation. Non-Metallic Mines 2021, 44 (5): 68~70, 74. in Chinese
- 34, **Luzheng Chen\***, Dahe Xiong. Progress in Filtration and Separation, Chapter 7: Magnetic techniques for mineral processing. Elsevier Publisher. 2015, 287~324.
- 35, **Luzheng Chen\***, Jianwu Zeng, Ruoyu Yang. Enhanced separation for ilmenite with centrifugal HGMS technique from tailings. Physical Separation`17. UK. 2017.6.15-16.