

教师名录

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张小明



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个人基本情况

张小明 (Xiao-Ming Zhang, Professor), 博士, 教授, 华中科技大学“华中学者”。国家优秀青年科学基金获得者, 德国洪堡学者。2001年获吉林大学工程力学学士学位, 2004年获吉林大学固体力学硕士学位, 2009年获上海交通大学机械电子工程博士学位。受洪堡基金会资助, 2010至2011年在德国Darmstadt University of Technology从事合作研究, 2011年至今任教于华中科技大学机械学院。

教师查询

姓名

所在单位

招生学科



主要从事数控加工与机器人加工技术研究，在切削过程仿真与表面完整性形成机制、加工动力学与工艺优化等方面开展了系统的工作。受邀多次担任国际学术会议分会主席，在美国机械工程学会汇刊J. Manuf. Sci. Eng.-Trans. ASME, Int. J. Mach. Tools Manuf.等制造领域权威国际期刊上发表论文30余篇，授权国家发明专利20项。

先进制造和机器人方向目前承担多项国家自然科学基金和国家科技重大专项任务，适合于理论探索和技术创新，欢迎机械、力学、材料和物理方向的同学报考硕士和博士研究生；欢迎多学科背景的博士后加入课题组共同成长。

QQ与微信号：77134803

办公室：先进制造大楼B222

主要研究方向

1. 数控加工：切削过程原位成像与物理仿真、切削表面完整性、加工动力学
2. 智能制造：加工过程大数据、数据驱动的工艺调控
3. 机器人技术：无人导航车开发与多机器人加工

开设课程

Fundamentals of Mechanical Manufacturing (外国留学生本科生课)

近年的科研项目、专著与论文、专利、获奖

主持的科研项目：

1. 国家自然科学基金，青年科学基金项目，点-线扫掠运动设计的NURBS方法及其在五轴数控加工中的应用，2011-2013

2. 国家自然科学基金，青年-面上连续资助项目，基于五轴加工运动综合的复杂零件铣削表面完整性创成机理研究，2014-2017
3. 国家自然科学基金，重大研究计划培育项目，基于仿生学的多机器人加工作业任务规划研究，2017-2019
4. 国家自然科学基金，优秀青年科学基金项目，数字化制造与数控加工技术，2018-2020
5. 国家科技重大专项，“飞机复杂结构件快速数控编程系统”子课题工序件快速建模及2.5轴补加工刀轨生成，2012-2014
6. 国家商飞公司创新基金，机械铣削对铝锂合金多台阶薄壁件抗疲劳性能的影响规律研究，2012-2013
7. 中国航发黎阳航空动力有限公司项目，整体叶环高效精密加工关键技术研究与应用示范
8. 中国航发南方工业有限公司项目，基于变形控制的薄壁多孔轴铣削加工参数优化与仿真应用
9. 中国航天科工三院北京动力机械研究所项目，复合材料超声振动加工及变形控制技术研究

荣誉与奖项：

1. 德国洪堡学者
2. 上海市优秀博士论文
3. 全国百篇优秀博士论文提名奖
4. 教育部新世纪优秀人才

代表性论文：

1. Dong Zhang, Xiao-Ming Zhang*, Han Ding, Inverse identification of material plastic constitutive parameters based on the DIC determined workpiece deformation fields in orthogonal cutting. 4th CIRP Conference on Surface Integrity, Tianjin China 2018. **Best Paper Award.**
2. Xiao-Ming Zhang, A study on the orthogonal cutting mechanism based on experimental determined displacement and temperature fields. **The Keynote speech** at 7th CIRP Conference on High Performance Cutting, Chemnitz Germany 2016.

3. Tao Huang, Xiao-Ming Zhang*, Juergen Leopold, Han Ding 2018. Tool orientation planning in milling with process dynamic constraints: a minimax optimization approach. *Journal of Manufacturing Science and Engineering, Transactions of the ASME* 140(11), 111002 (13 pages)
4. Le Cao, Xiao-Ming Zhang*, Tao Huang, Han Ding 2018. Derived nodes approach for improving accuracy of machining stability prediction. *Journal of Vibration and Acoustics, Transactions of the ASME* 140(3), 031017 (8 pages)
5. Dong Zhang, Xiao-Ming Zhang*, Han Ding 2018. Hybrid digital image correlation-finite element modeling approach for modeling of orthogonal cutting process. *Journal of Manufacturing Science and Engineering, Transactions of the ASME* 140(4), 041018 (14 pages)
6. Xin-Da Huang, Xiao-Ming Zhang*, Juergen Leopold, Han Ding 2018. Analytical model for prediction of residual stress in dynamic orthogonal cutting process. *Journal of Manufacturing Science and Engineering, Transactions of the ASME* 140(1), 011002 (17 pages)
7. Dong Zhang, Xiao-Ming Zhang*, Juergen Leopold, Han Ding 2017. Subsurface deformation generated by orthogonal cutting: analytical modelling and experimental verification. *Journal of Manufacturing Science and Engineering, Transactions of the ASME* 139(9), 094502 (12 pages)
8. Xiao-Ming Zhang*, Dong Zhang, Le Cao, Tao Huang, Juergen Leopold, Han Ding 2017. Minimax optimization strategy for process parameters planning: toward interference-free between tool and flexible workpiece in milling process. *Journal of Manufacturing Science and Engineering, Transactions of the ASME* 139(5), 051010 (11 pages)
9. Xiao-Ming Zhang*, Xinda Huang, Li Chen, Juergen Leopold, Han Ding 2017. Effects of sequential cuts on white layer formation and retained austenite content in hard turning of AISI52100 steel. *Journal of Manufacturing Science and Engineering, Transactions of the ASME* 139(6), 064502 (12 pages)
10. Dong Zhang, Xiao-Ming Zhang*, Wen-Jie Xu, Han Ding 2017. Stress field analysis in orthogonal cutting process using digital image correlation technique. *Journal of Manufacturing Science and Engineering, Transactions of the ASME* 139(3), 031001 (13 pages)

- 11.Xiao-Ming Zhang*, Li Chen, Han Ding 2016. Effects of process parameters on white layer formation and morphology in hard turning of AISI52100 steel. *Journal of Manufacturing Science and Engineering, Transactions of the ASME* 138(7), 074502 (9 pages)
- 12.Tao Huang, Xiao-Ming Zhang*, Xiaojian Zhang, Han Ding 2013. An efficient linear approximation of acceleration method for milling stability prediction. *International Journal of Machine Tools and Manufacture* 74: 56-64
- 13.Xiao-Ming Zhang*, Limin Zhu, Dong Zhang, Han Ding, Youlun Xiong 2012. Numerical robust optimization of spindle speed for milling process with uncertainties. *International Journal of Machine Tools and Manufacture* 61:9-19
- 14.Xiao-Ming Zhang*, Han Ding 2013. Note on a novel method for machining parameters optimization in a chatter-free milling process. *International Journal of Machine Tools and Manufacture* 72: 11-15
- 15.Kejia Zhuang, Xiao-Ming Zhang*, Dong Zhang, Han Ding 2013. On cutting parameters selection for plunge milling of heat-resistant-super-alloys based on precise cutting geometry. *Journal of Materials Processing Technology* 213(8): 1378-1386
- 16.Xinda Huang, Xiao-Ming Zhang*, Haikuo Mu, Xiaojian Zhang, Han Ding 2014. The influence of cryogenic cooling on milling stability. *Journal of Materials Processing Technology* 214: 3169-3178
- 17.Kejia Zhuang, Dahu Zhu, Xiao-Ming Zhang*, Han Ding 2014. Notch wear prediction model in turning of Inconel 718 with ceramic tools considering the influence of work hardened layer. *Wear* 313(1-2): 63-74
- 18.Xiao-Ming Zhang*, Haikuo Mu, Xinda Huang, Zhongtao Fu, Dahu Zhu, Han Ding 2015. Cryogenic milling of aluminium-lithium alloys: thermo-mechanical modelling towards fine-tuning of part surface residual stress. 15th CIRP Conference on Modelling of Machining Operations, Karlsruhe Germany, June 11-12, 2015.
- 19.Xiao-Ming Zhang, Dong Zhang, Kok-Meng Lee*, Han Ding. Flexible workpiece vibration suppression in milling process based on a new response metric. *Advanced Intelligent Mechatronics (AIM), 2015 IEEE International Conference on. IEEE, 2015: 1508-1513.*

20.Wen-Jie Xu, Xiao-Ming Zhang*, Juergen Leopold, Han Ding 2017. Mechanism of serrated chip formation in cutting process using digital image correlation technique. 16th CIRP Conference on Modelling of Machining Operation, Cluny France, June 15-16, 2017.