



首页 >> 师资队伍 >> 师资名录 >> 教授

## 师资名录

- 院士
- 教授
- 资深教授
- 副教授



### 司廷 特任教授

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### 个人简介:

司廷, 特任教授, 国家“优青”入选者, 中科院“青促会”会员。2000年考入中国科学技术大学, 2004年获理论与应用力学学士学位, 2009年获流体力学博士学位, 是中科院院长奖、郭永怀奖、安徽省优秀毕业生等获得者。之后从事博士后研究工作, 2012年至今为中国科学技术大学特任副教授、副教授和特任教授, 2017年入选国家“优青”, 曾于2012年及2014-2016年在美国俄亥俄州立大学做访问教授。主要从事实验流体力学、微纳尺度流动、界面不稳定性及生物医学工程等方面的基础、应用基础以及技术开发研究, 已主持4项国家自然科学基金项目, 获国家专利10余项, 部分成果正在产业化。先后在《Physical Review Letters》、《Journal of Fluid Mechanics》、《Physics of Fluids》、《Applied Physics Letters》、《Physical Review E》、《Lab on a Chip》等发表70余篇重要期刊论文, 受邀撰写《力学进展》综述2篇等。是中国力学学会微纳尺度流动专业组委员, 中国光学学会生物医学光子学专业委员会青年委员, 国际期刊BMC Cancer副编辑, 实验流体力学、空气动力学学报等青年编委。

### 教育经历:

- 2000.9~2004.7中国科学技术大学近代力学系, 理论与应用力学学士
- 2004.9~2009.6中国科学技术大学近代力学系, 流体力学 博士

### 工作经历:

- 2009.6~2012.2中国科学技术大学, 博士后
- 2012.3~2012.8美国The Ohio State University, 访问学者
- 2014.8~2016.4美国The Ohio State University, 访问教授
- 2012.2~至今 中国科学技术大学近代力学系, 特任副教授、副教授、特任教授, 国家“优青”

### 研究兴趣:

主要从事实验流体力学、微纳尺度流动、界面不稳定性、生物医学工程等方面的研究工作, 具体包括:

- 多介质微流体技术的基础和应用研究。利用流动聚焦、电雾化、电纺丝、微流控器件等多介质微流体技术制备复合微纳胶囊, 一方面开展多介质微流体的理论建模、数值模拟和实验验证, 另一方面开展微纳胶囊、液滴、颗粒的开发和应用;
- 流体力学界面不稳定性的基础研究。开发圆弧形汇聚激波产生技术、初始扰动界面生成技术以及流场观测技术, 开展激波和界面的相互作用研究, 实验与数值模拟以及理论相结合;
- 旋流卷吸技术基础和转化研究。利用旋转流体能够产生强大抽吸力的原理开发旋流卷吸技术, 在抽排、分选、运输、离心、净化等工农业领域有应用前景, 实现“零接触”、节能减排、环保等;
- 其他流体力学相关基础和应用问题研究。

### 主持项目:

- 国家自然科学基金优秀青年科学基金项目, 《实验流体力学》, 2018-2020, 负责人
- 国家自然科学基金面上项目, 《电场作用下同轴流动聚焦的复合射流不稳定性特性研究》, 2015-2018, 负责人
- 国家自然科学基金面上项目, 《反射激波作用气体界面的精细流场结构和湍流混合实验研究》, 2013-2016, 负责人
- 国家自然科学基金青年基金项目, 《流动聚焦中带电同轴射流的不稳定性研究》, 2011-2013, 负责人
- 财政部和教育部中央高校基本科研业务费, 《界面不稳定性精细流场结构和湍流混合的实验研究》, 2011-2012, 负责人
- 博士后科学基金面上资助, 《流动聚焦中非牛顿流体带电射流的不稳定性研究》, 2010-2011, 负责人

代表性论文:

- Measurement of a Richtmyer–Meshkov instability at an air–SF<sub>6</sub> interface in a semiannular shock tube. *Physical Review Letters*, 119: 014501, 2017.
- On the interaction of a planar shock with a three-dimensional light gas cylinder. *Journal of Fluid Mechanics*, 828: 289–317. 2017.
- Experimental study on a sinusoidal air/SF<sub>6</sub> interface accelerated by a cylindrically converging shock. *Journal of Fluid Mechanics*, 826: 819–829. 2017.
- The Richtmyer–Meshkov instability of a ‘V’ shaped air/SF<sub>6</sub> interface. *Journal of Fluid Mechanics*, 802: 186–202, 2016.
- On the interaction of a planar shock with an SF<sub>6</sub> polygon. *Journal of Fluid Mechanics*, 773: 366–394, 2015.
- Experimental investigation of cylindrical converging shock waves interacting with a polygonal heavy gas cylinder. *Journal of Fluid Mechanics*, 784: 225–251, 2015.
- On the interaction of a planar shock with a light polygonal interface. *Journal of Fluid Mechanics*, 757: 800–816, 2014.
- The Richtmyer–Meshkov instability of a three-dimensional air/SF<sub>6</sub> interface with a minimum-surface feature. *Journal of Fluid Mechanics (Rapids)*, 722(R2): 1–11, 2013.
- Modes in flow focusing and instability of coaxial liquid–gas jets. *Journal of Fluid Mechanics*, 629: 1–23, 2009.
- Numerical study on droplet generation in axisymmetric flow focusing upon actuation. *Physics of Fluids*, 30: 012111, 2018.
- Manipulation of three-dimensional Richtmyer–Meshkov instability by initial interfacial principal curvatures. *Physics of Fluids*, 29: 032106, 2017.
- Reflection of cylindrical converging shock wave at an air/helium gaseous interface. *Physics of Fluids*, 29: 016102, 2017.
- Interaction of cylindrically converging diffracted shock with uniform interface. *Physics of Fluids*, 29: 086101, 2017.
- The Richtmyer–Meshkov instability of a ‘V’ shaped air/helium interface subjected to a weak shock. *Physics of Fluids*, 28: 082104, 2016.
- Reflection of cylindrical converging shock wave over a plane wedge. *Physics of Fluids*, 28: 086101, 2016.
- A semi-annular shock tube for studying cylindrically converging Richtmyer–Meshkov instability. *Physics of Fluids (Letter)*, 27: 091702, 2015.
- Temporal instability of coflowing liquid–gas jets under an electric field. *Physics of Fluids*, 26: 054101, 2014.
- Experimental investigation of reshocked spherical gas interfaces. *Physics of Fluids*, 24: 054101, 2012.
- Parametric study of cylindrical converging shock waves generated based on shock dynamics theory. *Physics of Fluids*, 24: 026101, 2012.
- On the evolution of spherical gas interfaces accelerated by a planar shock wave. *Physics of Fluids*, 23: 084104, 2011.
- Spatial instability of coflowing liquid–gas jets in capillary flow focusing. *Physics of Fluids*, 22: 112105, 2010.
- Multiplex coaxial flow focusing for producing multicompartiment Janus microcapsules with tunable material compositions and structural characteristics. *Lab on a Chip*, 17: 3168–3175, 2017.
- Microencapsulation of indocyanine green for potential applications in image-guided drug delivery. *Lab on a Chip (Communications)*, 15: 646–649, 2015.

- Photopolymerization of complex emulsions with irregular shapes fabricated by multiplex coaxial flow focusing. **Applied Physics Letters**, 112: 071601, 2018.
- Steady cone-jet mode in compound-fluidic electro-flow focusing for fabricating multicompartement microcapsules. **Applied Physics Letters**(Cover paper), 108: 021601, 2016.
- Optical droplet vaporization of nanoparticle-loaded stimuli-responsive microbubbles. **Applied Physics Letters**, 108: 111109, 2016.
- Principal curvature effects on the early evolution of three-dimensional single-mode Richtmyer-Meshkov instabilities. **Physical Review E**, 93: 023110, 2016.
- Richtmyer-Meshkov instability of a three-dimensional SF<sub>6</sub>-air interface with a minimum-surface feature. **Physical Review E**, 93: 013101, 2016.
- Simultaneous measurements of geometric and viscoelastic properties of hydrogel microbeads using continuous-flow microfluidics with embedded electrodes. **Small**, 13: 1702821, 2017.
- Ultrasound mediated delivery of oxygen and LLL12 loaded stimuli responsive microdroplets for the treatment of hypoxic cancer cells. **Scientific Reports**, 7: 44908, 2017.
- Microfluidic fabrication of stimuli-responsive microdroplets for acoustic and optical droplet vaporizations. **Journal of Materials Chemistry B**, 4: 2723-2730, 2016.

