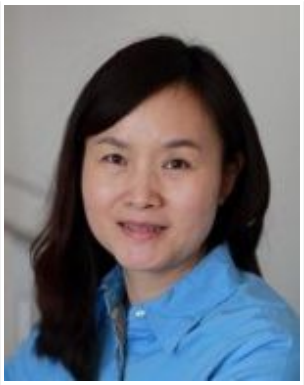

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教育背景

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1992.9-1995.2 西安交通大学工程力学系，硕士研究生，获工学硕士学位

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工作履历

1999.9-2001.9 清华大学，精密仪器与机械学系，摩擦学国家重点实验室，博士后

2001.9-2003.1 清华大学，精密仪器与机械学系，摩擦学国家重点实验室，助理研究员

2003.1-2016.12 清华大学，精密仪器与机械学系，摩擦学国家重点实验室，副研究员

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研究领域

摩擦磨损润滑机理与设计；纳米材料表界面行为及应用；界面力学及超低表界面力测量技术；机械动力学及故障诊断

研究概况

在现代机械工程领域，高速、重载、高剪切率等非常态工况条件对机械设备正常运行提出了前所未有的挑战。我们针对此问题，研制出重载高速下纳米级润滑综合测量仪，实现了摩擦副接触压力高达3.6Gpa、速度高达42m/s下的纳米级润滑膜厚度测量。揭示出微接触区不同特性润滑剂在重载、高速、高剪切率、乏润滑剂等苛刻工况条件下局部温升诱导接触区润滑失效机制。

纳米材料是指至少有一维尺寸处于纳米尺度范围的材料，由于其具有许多宏观材料所没有的特性，在医学工程、微纳米器件、半导体工程、表面工程、功能材料等领域极具潜力。我们针对集成电路制造的关键工艺-化学机械平坦化，研究了纳米颗粒在原子级光滑表面形成中的作用机制。发展了纳米颗粒机械特性测量、纳米颗粒运动观测实验系统,建立了颗粒作用表面的分子动力学模型，揭示了化学机械平坦化过程中纳米颗粒对原子级超光滑表面形成的作用。此外，开展了智能纳米颗粒的制备、表征及在润滑中的应用研究，以及二维纳米材料在电、热、力等耦合作用下的行为规律及应用研究。

各种机器的零件都是通过相互接触形成的表面/界面连接在一起的，它们对机器的安全稳定运行至关重要。随着现代工业的发展，表面/界面的尺度已经进入了微观的原子分子尺度。而由于长期以来人们忽视了这个领域的研究，使得表面/界面科学的发展很不完善。我们针对此问题，主要从宏观及微观角度出发，开展界面力学的理论及应用研究，以及微观界面力的测量技术研究。

应用基础方面研究：润滑机理及失效分析；润滑系统设计及优化；磨损失效分析；机械动力学分析及故障诊断。

先后主持及参加国家重点基础研究发展计划973项目课题、自然科学基金课题、国际合作项目、企业课题等10余项科研任务。发表学术论文 130篇，SCI收录100余篇；论文总他引1000余次。授权国家发明专利6项；合著专著1本，参编英文专著2本。

奖励与荣誉

《旋转机械非常态条件薄膜润滑机理及耦合动力学理论》，高等学校自然科学2等奖，2014年，第1完成人

《摩擦过程中微粒的行为、作用机制与控制》，高等学校自然科学1等奖，2010年，第9完成人

学术成果

代表性学术论文

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申请专利

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2. Jane Wang etc.，Encyclopedia of Tribology，Springer，2012，撰写了其中一章。

3. 黄平、郭丹、温诗铸，《界面力学》，清华大学出版社，2013。