

# 机械工程博士后流动站

## MECHANICAL ENGINEERING POSTDOCTORAL FELLOWS PROGRAMME

西北工业大学机械工程博士后流动站于 2003 经国家人事部批准设立，由机电学院负责建设，该站涉及的二级学科有：机械制造及其自动化、机械电子工程、机械设计及理论、车辆工程四个学科。拥有：陕西省微/纳米系统重点实验室、机械结构与系统多学科优化设计实验室、机械系统的虚拟样机与仿真实验室、产品造型设计快速创新实验室、先进传动系统设计理论及制造实验室、陕西省数字化特种制造装备工程研究中心等一些重要的教学和科研基地。

Northwestern Polytechnical University (NPU) set up its Mechanical Engineering Postdoctoral Fellows Programme (ME-PFP) in 2003 with an authorization of the Ministry of the Personnel (currently known as Ministry of Human Resources and Social Security of the People's Republic of China). Developed by NPU School Electromechanical Engineering, the programme involves 4 subdisciplines, i.e. Machinery Manufacturing & Automation, Mechatronics Engineering, Mechanical Design & Theories, and Automotive Engineering. ME-PFP is proud of multiple laboratories, educational bases and research bases, e.g. the Shaanxi Provincial Key Micro-Nano System Laboratory, the Interdisciplinary Mechanical Structure and System Optimal Design Laboratory, the Mechanical System Virtual Prototype and Simulation Laboratory, the Product Model Design and Fast Innovation Laboratory, the Advanced Transmission System Design & Manufacturing Laboratory, and the Shaanxi Digital Special Manufacturing Equipment Engineering Center.

### 一、科研项目

#### 1. Research Programmes

该学科教师共承担 120 多项国家部委、省市的科研任务，完成了 620 余项科技项目，年均科研经费 3400 万元。在科学研究方面，博士后先后承担与参与 973、863、国家自然科学基金项目和省部级科研项目共 50 多项，其中：参与国家级项目 21 项，参与省（部）级项目 30 余项。其中参与国家级项目经费数额约为 3219 万元。

Entrusted with 120+ ministerial, provincial and municipal research programmes, ME-PFP has completed 620+ S&T programmes, receiving an average of ¥34M in grant every year. In scientific research the postdoctoral fellows have participated in 50+ 973 Programs, 863 Programs, NNSF programmes and provincial/ministerial

programmes. These include 21 national programmes, and 30+ provincial or ministerial programmes. The grants for national programme involvement come to a total of ¥32.19M.

自建站以来博士后发表论文共 96 篇,其中 SCI 收录 13 篇, EI 收录 30 篇, CSCD 收录 2 篇, ISTP 收录 13 篇。出版论著 3 本。获专利 15 项。获中国高校科技进步二等奖 2 次,陕西省高等学校科学技术奖一等奖与陕西省科学技术奖二等奖和三等奖 5 次,教育部提名国家科学技术奖自然科学奖二等奖 1 次。

Since its introduction ME-PFP has published 96 postdoctoral papers in all, including 13 collected by SCI, 30 by EI, 2 by CSCD and 13 by ISTP. ME-PFP has published 3 treatises, obtained 15 patent grants. It won 1 Chinese Universities Science & Technological Progress Award (2<sup>nd</sup> prize); 5 Shaanxi Universities Science & Technology Awards (1<sup>st</sup> prize), Shaanxi Science & Technology Awards and Shaanxi Science & Technology (2<sup>nd</sup> prize and 3<sup>rd</sup> prize); and 1 MOE nomination for National Science & Technology Award in Natural Science (2<sup>nd</sup> prize).

## 二、科研条件

### 2. Research Platforms

本站具有优良的科研条件,目前,该学科中的“机械电子工程”属于国家重点学科,机械制造及其自动化和机械设计及理论属于陕西省重点学科,微机电系统与纳米技术实验室属于陕西省重点实验室,数字化特种制造装备工程研究中心获得陕西省“13115 工程”的支持,开始进一步全面提升平台条件。2007 年,“机械电子工程”被评为国家重点学科,“微/纳米系统”是其主要构成方向之一。本学科方向已完成“985 工程”一期建设,正在进行二期建设。目前,已经建立了能够实现多晶硅表面加工、湿法体硅加工、高深宽比干法刻蚀等工艺的 MEMS 集成制造平台,包括 MEMS 集成设计单元、硅基材料微加工单元、微/纳检测单元等,为西部地区首屈一指的微机电系统制造和设计研发平台。

ME-PFP is proud of many high-caliber research platforms. Electromechanical Engineering, a ME-PFP discipline, belongs to the family of disciplines of national importance. Machine Manufacturing & Automation and Mechanical Design & Theories belongs to the family of disciplines of provincial importance. The Microelectromechanical Systems (MEMS) and Nanotechnology Laboratory is a laboratory of provincial importance. The Digital Special Manufacturing Equipment Engineering Center captured grants from Shaanxi 13115 Programme. The capabilities are upgrading the caliber of research platforms extensively. In 2007,

Electromechanical Engineering, rated as a discipline of national importance in 2007, is mainly oriented to Micro-Nano Systems. ME-PFP has completed the 1<sup>st</sup> phase of 985 Program and the 2<sup>nd</sup> Phase is underway. Thus far, ME-PFP has erected in place a MEMS-integrated machining system to perform such processes as polysilicon surface machining, bulk silicon wet etching, and high aspect ratio dry etching. Known as the most advanced MEMS manufacturing and design system, the system is composed of the MEMS-integrated design module, the silicon-based material micromachining module, and the micro-nano detector module.

本站还拥有国家工科机械基础教学基地，包括机械基础教学实验中心、系列课程开放式学习环境、机械创新设计与实验中心、图形中心等。另外该学科还建有，中美联合工程设计与仿真研究所、中美 CBVCT 图像工程研究中心、中法并行工程实验室、香港蒋氏基金工业设计培训中心、美国微软授权高级技术培训中心、Solidworks、UG、AutoDesk 软件培训中心等多个中外合作研究机构，具有广泛的国际合作交流。

ME-PFP has multiple national engineering machinery basics education centers, including basic mechanics education & experiment centers, course open learning environments, innovative mechanical design & testing centers, and graphic design centers. Additionally, in order to maintain extensive relations in the international community, ME-PFP has run in cooperation with foreign stakeholders quite a few research institutes, e.g. Sino-U.S. Engineering Design & Simulation Institute, Sino-U.S. CBVCT Image Engineering Research Center, Sino-Franco Concurrent Engineering Laboratory, Chiang Chen Industrial Charity Foundation Industrial Design Training Center, Microsoft-certified Advanced Technical Training Center, SolidWorks, UG, and AutoDesk Software Training Center.

### 三、学术队伍及带头人

#### 3. Academic Team and Lead Researchers

本站拥有一支学术思想活跃、年龄结构合理、综合素质优良的实力雄厚的学术队伍。教师中有国家级专家 2 人，教育部教学指导委员会委员 4 人，陕西省教学名师 1 人，长江学者 1 人，教授 34 人，博士生导师 19 人，副教授（含高级工程师）66 人。

CTE-PFP is supported by an enthusiastic and powerful academic team of reasonable age structure and fine overall qualities. It is proud of 2 national-level experts, 4 MOE Education Steering Committee members, 1 Shaanxi Extinguished

Expert, 1 Changjiang Scholar, 34 professors, 19 doctoral advisers, and 66 associate professors (inclusive of senior engineers).

#### 四、招收计划

#### 4. Enrollment Programme