**一、高鸿钧院士**

**姓名：高鸿钧 职称：院士 单位：中国科学院物理研究所**

**个人简介：**高鸿钧，中国科学院物理研究所研究员，中国科学院大学物理科学学院院长，凝聚态物理学家，中国科学院院士（数理学部），第三世界科学院院士，第十二届和第十三届全国政协常委。

**报告题目：量子结构的调控及其原理性应用**

**报告摘要：**Control over charge and spin states at the single molecule level is crucial not only for a fundamental understanding of charge and spin interactions but also represents a prerequisite for development of molecular electronics and spintronics. While charge manipulation has been demonstrated by gas adsorption and atomic manipulation, the reversible control of a single spin of an atom or a molecule has been challenging. In this lecture, I will present a demonstration about a robust and reversible spin control of single magnetic metal-phthalocyanine molecule via attachment and detachment of a hydrogen atom, with manifestation of switching of Kondo resonance. Low-temperature atomically resolved scanning tunneling microscopy and density functional theory calculations revealed the spin control mechanism, by which the reduction of spin density is driven by charge redistribution within magnetic 3d orbitals rather than a change of the total number of electrons. This process allows spin manipulation at the single molecule level, even within a close-packed molecular array, without concern of molecular spin exchange interaction. I will also talk about manipulation of electron pathway in a single-molecule device consisting of an FePc molecule attached to Au(111) surface which can be selected between two molecular orbitals by varying a magnetic field, giving rise to a tunable anisotropic magnetoresistance up to 93%. Furthermore, I will present our recent work on the graphene origami with scanning probe microscope. These works open up a new opportunity for quantum information recording and storage at the ultimate molecular limit.

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**二、郑晓静院士**

**姓名：郑晓静 职称：院士 单位：西安电子科技大学**

**个人简介：** 郑晓静，中国科学院院士，中国科学技术协会副主席，西安电子科技大学教授。分别于1982年和1984年毕业于华中科技大学力学系，获工学学士和硕士学位；1987年毕业于兰州大学力学系，获理学博士学位。1987年12月起任兰州大学力学系讲师、1988年任副教授、1992年任教授，2009年当选中国科学院院士（数理学部）、2010年当选发展中国家科学院院士（工程学部）。

**报告题目：关于极端力学**

**报告摘要：**随着前沿科学和新技术不断发展，工程材料与结构的超常规尺度、密度、硬度、刚度等性能以及在超常规温度、速度、场强和恶劣天气等服役环境中的极端力学响应和规律需要力学提供更为有效的理论和方法。本报告试图从极端力学的基本定义和科学内涵出发，结合重大工程问题和大科学问题，从极端性能、极端载荷、学科发展等三个方面系统介绍了极端力学的研究现状，并总结了极端力学的特点及其对力学理论、计算方法和实验技术的挑战，最后讨论了对极端力学发展的初步思考。

**三、郑泉水院士**

**姓名：郑泉水 职称：院士 单位：清华大学**

**个人简介：**郑泉水，博士、教授。1989年于清华大学获得工学博士学位，1993年5月至今清华大学航天航空学院工程力学系教授，2000年受聘教育“长江学者奖励计划”特聘教授。现任清华学堂人才培养计划“钱学森力学班”首席科学家，清华大学微纳米力学与多学科交叉研究中心主任。2011-15曾任中国力学学会副理事长、力学学报和Acta Mechanica Sinica两刊主编，《International Journal of Solids and Structures》等多个国内外期刊编委。

报告题目：结构超滑的物理与力学：挑战与机遇

报告摘要：With the rapid developments of nanotechnology and microfabrication technology, ceaselessly miniaturized sensors and devices are emerging in large numbers of applications in internet of things, sensor networks, big data, personal health systems, artificial intelligence, et al. However, a great challenge is the increasing influence of friction and wear with decreasing size. Structural superlubricity (SSL), a state of nearly zero friction and wear between two directly contacted solid surfaces first realized in microscale in 2012, provides a revolutionary solution. Here we give a brief review of SSL, with particular emphasis on its implications of physics and mechanics, as well as challenges and opportunities.

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3. Hod O, Meyer E, Zheng QS, Urbakh M: Structural superlubricity and ultralow friction across the length scales. Nature, 563 (2018), 485–492,ZHENG Quanshui is a professor at the Department of Engineering Mechanics, Tsinghua University. In the last two decades, Zheng’s main research interest is the interfacial mechanics and physics based on nanotechnology. In particular, he pioneered the technology and applications of structural superlubricity, a state of nearly zero friction and wear between two contacted solid surfaces, and the understanding on the instability and size effect of superhydrophobicity. During the 1980-1990’s, Zheng established the theory of representations for tensor functions and the invariant base of nonlinear and anisotropic constitutive equations, and solved some long-lasting fundamental problems in continuum mechanics (such as Eshelby problem for non-ellipsoidal inclusions, micromechanical model, and Cauchy mean rotation).

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**四、周兴江教授**

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**个人简介：**周兴江，中国科学院物理研究所研究员, 超导国家重点实验室主任。1988年清华大学学士，1990年清华大学硕士，1994年中科院物理研究所博士。1995-1997年德国斯图加特马普固体研究所洪堡学者，1997-2006年为美国斯坦福大学物理学者兼美国劳仑斯Berkeley国家实验室先进光源束线科学家。2004年入选中科院“百人计划”，任职于中科院物理研究所至今。

报告题**目：高温超导体的光电子能谱研究**

报告摘要：The mechanism of high temperature superconductivity in the copper-based and iron-based superconductors remains a prominent and challenging issue in condensed matter physics. Angle-resolved photoemission spectroscopy (ARPES), as a powerful technique to directly probe the electronic structure of materials, has played a key role in studying high temperature superconductors. In this talk, I will first briefly review the history and present status of high temperature superconductivity research, followed by an introduction of angle-resolved photoemission spectroscopy (ARPES), particularly the state-of-the-art laser-based ARPES we have developed in the last decade. I will then report some of our recent laser-ARPES studies on high temperature cuprate superconductors [1-3] and iron-based superconductors [4-9].

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**五、金晓峰教授**

**姓名：金晓峰 职称：教授 单位：复旦大学**

**个人简介：**金晓峰，男，复旦大学物理系教授，教育部 “长江学者奖励计划” 特聘教授。1989年毕业于复旦大学物理系获博士学位，1987—1988年于法国同步辐射中心（LURE）联合培养。1995年至今担任复旦大学教授。 [1-2]

报告题目：**诗情画意的物理学**