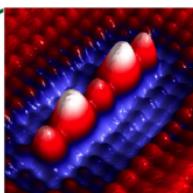


# LEGO 2 NANO

TSINGHUA, BEIJING SEPT 1-7 2013



CENTIMETER 厘米



NANOMETER 纳米



BIDI



The LEGO Foundation

## **LEGO2NANO**

LEGO2NANO 2013 is the third in a series of UK-China Summer Schools between Tsinghua University, Peking University and University College London. School participants from diverse educational backgrounds are expected to work on a competitive challenge in designing a low-cost scanning probe microscope within a week. In collaboration with Tsinghua-University-based Toyhouse and the Singapore University of Technology and Design, participants will work in an innovative space using a systematic distributed learning workflow with integrated design methodology. The school is designed to allow hands-on work with the latest technologies such as 3D printing as well as design from demands' point of view. Participants will be visiting and working with several laboratories in Tsinghua University and Peking University as well as experiencing the technological atmosphere of Zhongguancun, Beijing's Silicon Valley, and exploring aspects of Chinese culture.

## **ORGANIZERS**

Centre for Nano & Micro Mechanics, Tsinghua University  
Institute of Microelectronics, Peking University  
London Centre for Nanotechnology, University College London  
Institute of Making, University College London  
Toyhouse Studio, Tsinghua University  
Singapore University of Design and Technology  
SUTD-MIT International Design Centre

## **SPONSORS**

Tsinghua University Office of International Cooperation & Exchange  
LEGO Foundation

## **CONTACT INFO**

Official Website	<a href="http://start.toyhouse.cc">start.toyhouse.cc</a>
Weibo	Toyhouse
Email	<a href="mailto:toyhouse.adm@gmail.com">toyhouse.adm@gmail.com</a>
Contact Number	Emma (+86 157-2681-1352)
Address	North 410, Shun-De Building, Tsinghua University, Beijing 100084

### SPEAKERS

Francois Grey, Deputy Director, CNMM, Tsinghua University  
Gabriel Aeppli, Director, London Centre for Nanotechnology, UCL  
Ben Koo, Director, Toyhouse, Tsinghua University  
Lu-Ping Xu, Associate Prof. & Deputy Director, CNMM, Tsinghua University  
Ying-Qing Xu, Academy of Art & Design, Tsinghua University  
Bo Stjerne Thomsen, Senior Research Manager, LEGO Foundation  
Lin Li, Academic Member, CNMM, Tsinghua University  
Neil Curson, Lecturer, London Centre for Nanotechnology, UCL  
Yufeng Jin, Researcher, Peking University  
Yu Xiaomei, Institute of Microelectronics, Peking University  
David Li, Founder, XinCheJian Makerspace, Shanghai  
Ellie Doney, Artist & Co-Founder, Institute of Making, UCL  
Eric Pan, CEO, SEEED Studio  
Steven Canvin, Community Manager, LEGO MINDSTORMS

### PARTICIPATING UNIVERSITIES

Oxford University, UK  
Peking University, China  
Tsinghua University, China  
University College London, UK

## SCHEDULE

September 1st, Sunday

- 1400 Introduction to LEGO2NANO, Francois Grey @ 412, ShunDe Building
- 1430 Making scientific tools, Gabriel Aeppli @ 412, ShunDe Building
- 1500 Break
- 1515 The Extreme Learning Process, Ben Koo @ 412, ShunDe Building
- 1530 Open Wisdom Lab @ CNMM, Luping Xu @ 412, ShunDe Building
- 1545 LEGO and Learning, Bo Stjerne Thomsen @ 412, ShunDe Building
- 1600 Break
- 1615 Team Building / Understanding Problem / Customer Needs Power Session / School Prep @ 412, ShunDe Building
- 1740 Tour Around Classrooms & Laboratory
- 1800 Dinner @ Tsinghua Cafeteria

September 2nd, Monday

- 0900 School Visit 1 / Understanding Technical Issues @ Fundamental Industrial Training Centre (Training Centre for short)
- 1200 Lunch @ 412, ShunDe Building
- 1230 Introduction to Scanning Technologies, Lin Li @ 412, ShunDe Building
- 1300 Scanning Probe Microscopy Intro, Neil Curson @ 412, ShunDe Building
- 1330 Break
- 1400 Ideation Power Session Lesson @ Training Centre
- 1800 Dinner @ Vege Tiger

September 3rd, Tuesday

- 0900 Prototyping Power Session Lesson @ Training Centre
- 1200 Lunch @ 412, ShunDe Building
- 1230 3D Packaging Intro, Yufeng Jin @ 412, ShunDe Building
- 1300 Polymer-based Micro & Nano Fabrication Intro, Yu Xiaomei @ 412, ShunDe Building
- 1330 Break
- 1400 Build Test Phase 1A @ Training Centre
- 1800 Dinner

September 4th, Wednesday

- 0900 Build Test Phase 1B @ Training Centre
- 1200 Lunch @ 412, ShunDe Building
- 1230 Digital Culture and Chinese Culture, Ying-Qing Xu @ 412, ShunDe Building
- 1300 Crowdcrafting and The Open Science Movement, Francois Grey @ 412, ShunDe Building
- 1330 Break
- 1400 Visit to NCNST / Microelectronics / MaxPace Maker
- 1600 High School Student Visit by Tsinghua Fu Zhong @ Training Centre
- 1830 Dinner @ Xi Chun Yuan Restaurant

September 5th, Thursday

- 0900 Build Test 2A @ Training Centre
- 1200 Lunch @ 412, ShunDe Building
- 1230 Chinese Maker Movement, David Li @ 412, ShunDe Building
- 1300 The UK Maker Movement, Ellie Doney @ 412, ShunDe Building
- 1330 Break
- 1400 Build Test Phase 2B @ Training Centre
- 1800 Dinner

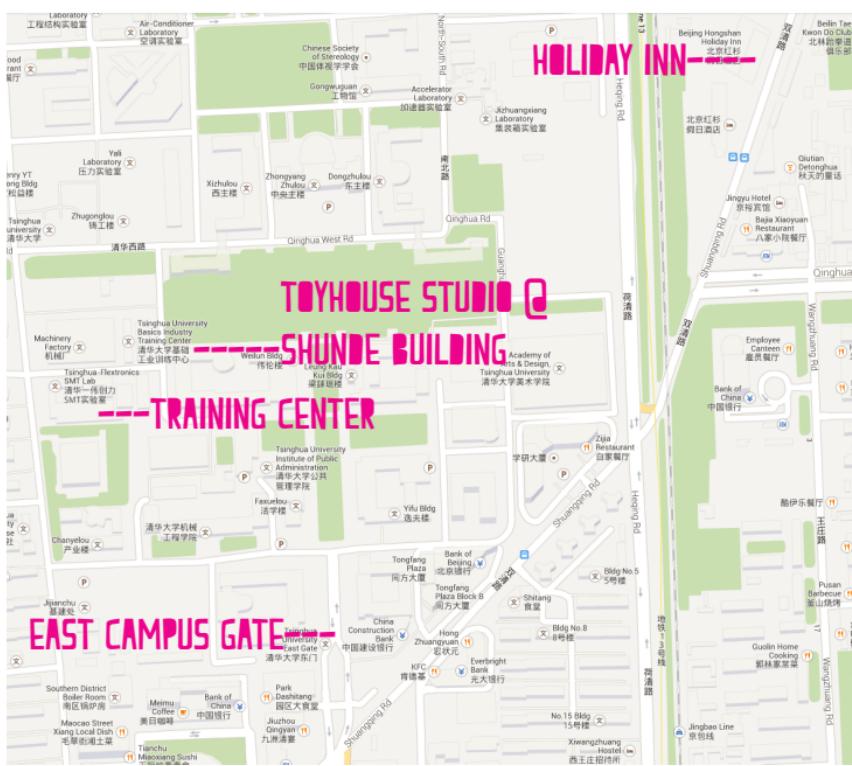
September 6th, Friday

- 0900 Build Test Final Phase @ Training Centre
- 1200 Lunch @ 412, ShunDe
- 1230 China & The Open Hardware Industry, Eric Pan @ 412, ShunDe
- 1300 LEGO Mindstorms Community, Steven Canvin @ 412, ShunDe
- 1400 Preparation & Final Adjustment @ Training Centre
- 1630 Award Presentation Ceremony / Final Student Test @ Training Centre
- 1830 Dinner

September 7th, Saturday

- 0800 Great Wall Excursion

## MAP



## GREAT WALL EXCURSION



## SITES

### National Centre for Nanoscience & Technology, China

The National Center for Nanoscience and Technology(NCNST) of China is co-founded by Chinese Academy of Sciences (CAS) and Ministry of Education. In NCNST, basic and applied research in nanoscience has been positioned as the main research direction. Its objective is to build a public technological platform and research base for nanoscience, which is featured with state-of-the-art equipments and is open to both domestic and international users.

### The Institute of Microelectronics, Peking University, China

Institute of Microelectronics, Peking University Institute of Integrated Micro-Nano Systems was founded in 1996. Over the years, under the guidance of Academician Yang Yuan Wang, the institute research is dedicated to micro-nanofabrication technologies, micro-nano-devices and integrated micro-nano System.

### Beijing Maker Space, China

The lab was established in January this year by a mysterious hacker called Flamingo. The mission is to encourage social innovation and develop the open-source hardware ecosystem by building a physical and online community where people can learn, share and work on projects using interactive design. Like open-source software, open source hardware means people from around the world have already tried to build something and can share how they did it, so an engineer does not start from nothing. The beauty of knowledge-sharing means people can build on and improve what somebody else has already done.

### Reminder / Things to bring

- \* Wear covered shoes for rigorous walking activity
- \* Umbrella / Poncho
- \* Sufficient amount of water for half-a-day
- \* Shades (optional)
- \* Camera (optional)
- \* Snacks (optional)

We encourage you to travel light!

## NOTE

目录

中国国家纳米科学中心(NCNST)是由中国科学院(CAS)和教育部共同创办的研究中心。NCNST的主要研究方向为纳米科学的基础理论与科学应用。NCNST的奋斗目标是为纳米科学提供一个公共的技术平台，并打下研究基础。这个技术平台将向国内与国外的用户开放最先进的科学设备。

微电子研究所，北京大学  
北京实验室成立于1996年，多年来在王阳元院士的指导下，致力于微纳加工技术、微纳米器件和集成微纳系统研究。本研究所以“微米/纳米加工技术国家重点实验室”的重要组成部分。

北京创客空间是由一个叫Familingo的神秘创客于今年1月发起成立的创客组织。其使命是鼓励来自实体经济社会以及线上线下社区的用户一起构建和发展开源硬件生态体系。在这里，人们可以通过社交媒体设计来学习、分享和工作。通过使用开源硬件和开源软件，可以使来自世界各国各地的工程师分享他们的知识与开发成果。在开源所创建的工作室，每一个工程师都可以通过完善别人的工作来开发新的产品。

温馨提示 / 必备品

- \* 面巾 / 面衣
- \* 轻便耐用的全包裹鞋子（不要穿拖鞋或凉鞋）
- \* 整全天享用的充足的淡水
- \* 墨镜（可选）
- \* 照相机（可选）
- \* 食食（可选，尽量带无果皮的食物）

我们鼓励轻装上阵！



墙体长城游览



地图

## 项目日程

九月四日，星期三

0900	构建测试第一阶段B@基础工业训练中心	休息	1300
1200	午餐@舜德楼 412	数字文化与中国文化, 陈迎庆@舜德楼 412	1230
1300	集体设计和开放科学运动, Francois Grey @舜德楼 412	参观国家纳米科学技术中心/微电子研究所/北京创客空间	1400
1400	休息	高生观察@基础工业训练中心	1600
1600	晚餐@舜德楼@基础工业训练中心	晚宴@熙春园	1800

九月五日，星期四

0900	构建测试第二阶段A@基础工业训练中心	午餐@412舜德楼	1200
1230	上海新车间创客空间创始人@舜德楼 412	英国创客运动, Ellie Doney@舜德楼 412	1300
1330	休息	构建测试第二阶段B@基础工业训练中心	1400
1400	晚餐@舜德楼	晚宴@熙春园	1600
1600	高生观察@基础工业训练中心	晚宴@熙春园	1800

九月六日，星期五

0900	构建测试最后一阶段@基础工业训练中心	午餐@舜德楼 412	1230
1230	中国和开源硬件行业, Eric Pan@舜德楼 412	乐高 Mindstorms 社区, Steven Canvin@舜德楼 412	1300
1330	休息	最终展示会准备@基础工业训练中心	1400
1400	颁奖典礼@基础工业训练中心	颁奖典礼@基础工业训练中心	1630
1630	晚宴	晚宴	1830

九月七日，星期六

长城文化之旅

0800

项目日程

九月一日，賈日曉

1400 Legos Nano 和人員介紹, Francois Grey@驛鐵

1430 制造科学工具, Gabriel Aeppli@麻省理工 412

107

1515 教學資源(XLP)介紹, 頤學龜@郵德樓412

1530 CNMM 的开放智慧实验室, 微信号 @智慧微楼4

1530 CNMM

1600 休息

1019

1740

1800 晴馨@观蝶园餐厅(万人饮食广场)

四目二日是星期一

一九三〇年二月一日

1200 牛醫@醫德錄 412

1230 技術米介林, 林力@驛傳媒 412

1300 1290 1280 1270 1260 1250 1240 1230 1220 1210 1200 1190 1180 1170 1160 1150 1140 1130 1120 1110 1100 1090 1080 1070 1060 1050 1040 1030 1020 1010 1000 990 980 970 960 950 940 930 920 910 900 890 880 870 860 850 840 830 820 810 800 790 780 770 760 750 740 730 720 710 700 690 680 670 660 650 640 630 620 610 600 590 580 570 560 550 540 530 520 510 500 490 480 470 460 450 440 430 420 410 400 390 380 370 360 350 340 330 320 310 300 290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10

1300 |

1330

卷之三

1800 賽馬場@賽馬場

九月三日，賈三

0900 原型设计课程@基础工业训练中心

1200  
2000  
年鑑@総務省 412

200 1200 1300 1400

1230

1300 高分子微纳米加工介绍, 刘晓梅@深大

1330 1999 休寧

1330

400 中国工业机器人

1800 論著

## 项目介绍

François Géry, Deputy Director, CNMM, 清华大学  
Gabriel Aeppli, Director, 伦敦纳米技术中心, 伦敦大学学院  
顾晓璐, Director, Toyhouse, 清华大学  
徐芦平, Associate Prof. & Deputy Director, 微纳力学与多学科交叉创新研究中  
Bo Sjøerne Thomesen, Senior Research Manager, 乐高基金会  
Neil Curson, Lecture, 伦敦纳米技术中心, 伦敦大学学院  
Yufrong Jin, Researcher, 北京大学  
于晓海, Institute of Microelectronics, 北京大学  
David Li, Founder, Xinchelian Makerspace, 上海  
Elie Doney, Artist & Co-Founder, Institute of Making, 伦敦大学学院  
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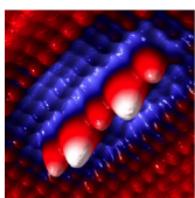
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牛津大学, 英国  
伦敦大学学院, 英国  
清华大学, 中国  
北京大学, 中国  
北京交通大学, 中国  
北京大学, 中国

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北京交通大学, 中国  
北京大学, 中国



NANOMETER 纳米



CENTIMETER 厘米



清华大学，九月一日到九月七日  
**LEGO NANO**

