# 2013 International Graduate Summer School Course on

# Sustainable Energy

# Date: July 27th - August 9th, 2013

# Location: Shanghai Jiao Tong University, Minhang District, Shanghai, China

# Topics: Technologies related to sustainable energy and its utilization

# Instructors:

Prof. **Arne Bredesen** (NTNU)

Prof. **Trygve EIKEVIK** (NTNU)

Prof. **Vojislav NOVAKOVIC** (NTNU)

Assoc. Prof. **Annemie WYCKMANS** (NTNU)

Assoc. Prof. **Aoife WIBERG** (NTNU)

Assoc. Prof. **Rolf Andre BOHNE** (NTNU)

Research Associate **Laurent GEORGES** (NTNU)

Prof. **Olav Bjarte FOSSO** (NTNU)

PhD candidate **Clara GOOD** (NTNU)

Prof. **Yuguo Li**  (Hongkong)

Prof. **Shengwei Wang** (Hongkong)

Prof. **Xianfan Xu** (Purdue University)

Prof. **Lingai Luo** (University of Nantes)

Prof. **Xiaobing Luo** (HUST)

Prof. **Xingang Liang** (Tinghua)

Prof. **Zhen HUANG** (SJTU)

Prof. **Ruzhu WANG** (SJTU)

Prof. **Guoliang DING** (SJTU)

Prof. **Yanjun DAI** (SJTU)

Prof. **Junliang Zhang** (SJTU)

# Syllabus:

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| **Date** |  | **Topic** | **Instructor** |
| July 28(Sun.) | 09:00-10:00 | Opening class, and Energy outlook of China | Zhen Huang |
| 10:30-11:30 | Nano Technology Energy Systems | Xianfan Xu |
| 14:00-15:00 | Renewable energy policy and market | Ruzhu Wang |
| 15:30-16:30 | Energy storage Options | Lingai Luo |
| July 29(Mon.) | 09:00-11:45 | LED lighting and energy saving | Xiaobing Luo |
| 14:00-16:45 | Wind energy options and key technologies | Xu Cai |
| 17:00-21:00 | Sightseeing in Downtown | Qian HuangTianshu Ge |
| July 30(Tues.) | 09:00-11:45 | Fuel cell and electric storage | Junliang Zhang |
| 14:00-16:45 | Integrated Solar Energy Systems | Aoife WIBERG Clara GOOD |
| July 31(Wed.) | 09:00-11:45 | New thermodynamic concept | Xingang Liang |
| 14:00-16:45 | Thermodynamic loss analysis using T-S-diagram | Arne Bredesen |
| August 1 (Thurs.) | 09:00-10:00 | Smart Energy systems | Shengwei WANG |
| 10:20-11:45 | Smart Cities | Annemie WYCKMANS |
| 14:00-16:45 | Smart grids | Olav Bjarte FOSSO |
| August 2 (Fri.) | 09:00-11:45 | Refrigeration and heat pump simulation | Guoliang Ding |
| 14:00-16:45 | CO2 Refrigeration and Heat Pumping Systems | Trygve EIKEVIK |
| August 3 (Sat.) | 09:00-11:45 | Zero Energy/Emission Buildings (ZEBs) | Vojislav NOVAKOVIC |
| 14:00-16:45 | Solar energy technologies and Green Building | Yanjun Dai |
| August 4 (Sun.) | 09:00-11:45 | Embodied energy | Rolf Andre BOHNE |
| 14:00-16:45 | Thermal performance simulation of ZEB | Laurent GEORGES |
| August 5 (Mon.) | 08:00-20:00 | Presentation by students | Al l students |
| August 6 (Tues.) | 08:00-20:00 | Sightseeing nearby Shanghai | Qian HuangYong LiTianshu Ge |
| August 7-August 8  | 09:00-17:00 | National Competition of Energy Saving | All instructors and students |
| August 9 |  | Closing ceremony | Ruzhu Wang |