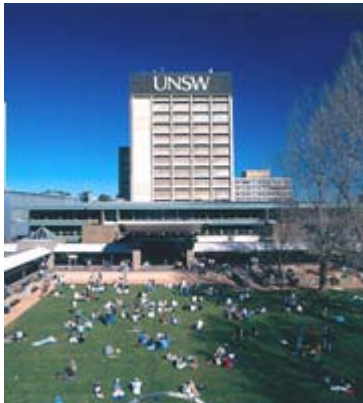


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# THE SCHOOL OF MECHANICAL & MANUFACTURING ENGINEERING UNIVERSITY OF NEW SOUTH WALES SYDNEY AUSTRALIA

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Dr GARY ROSENGARTEN  
HEAD OF THERMOFLUIDS

NOVEMBER 2008



*School of Mechanical & Manufacturing Engineering @ UNSW*

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# UNSW

- UK Times ranking- 45 in world 2008
- Engineering -27 in world 2008
  - top in Australia
- AGSM MBA Programs are consistently ranked as No. 1 in Australia and as top-tier programs on a global scale



# Facts and Figures

- Students (2007 enrolments) 39,067
- International Students (2007 enrolments) 7,839
- Staff (2007 head count) 6,014
- Degrees and diplomas awarded (2006) 9,175
- Total degrees and diplomas awarded since year of foundation 204,167
- Alumni 191,396
- Faculties 9
- Schools 75
- Centres 69
- Institutes 6
- Principal teaching hospitals 4
- Residential colleges 8
- Undergraduate programs available 325
- Postgraduate programs available 656
- Kensington site: area (ha) 38
- Permanent buildings 85
- Items in University Library 2.7m



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# Mechanical Engineering

■ Academic and research staff	30
■ Laboratory & workshop staff	21
■ Administrative staff	11
■ Undergraduate students	1000
■ Master coursework students	110
■ Research students (ME, PhD)	90



# Major Research Areas

- **Fundamental Research Areas**
  - Fluid & Thermal Engineering
  - Manufacturing System & Processes
  - Robotics & Autonomous Systems
  - Vibration & Dynamics
  - Design & Analysis
- **Emerging Research Areas**
  - Micro/Nano Manufacturing
  - Life Cycle Engineering



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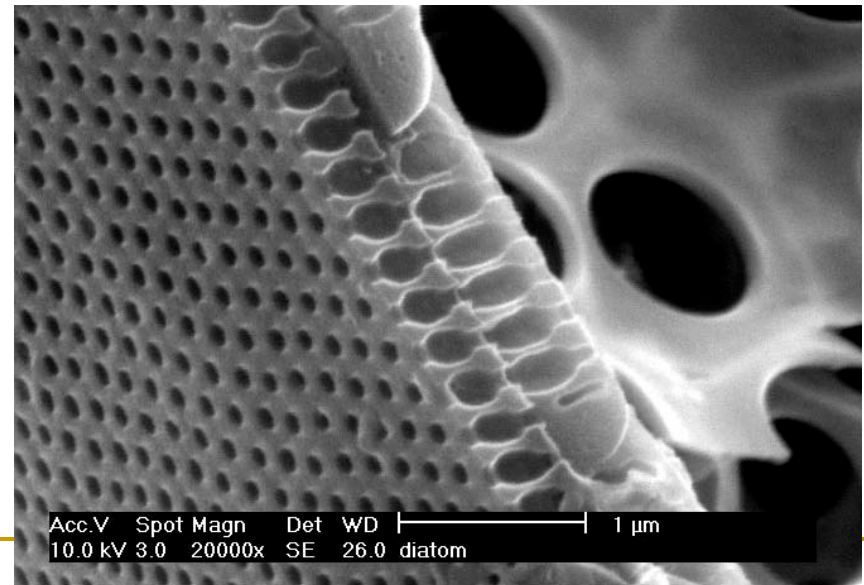
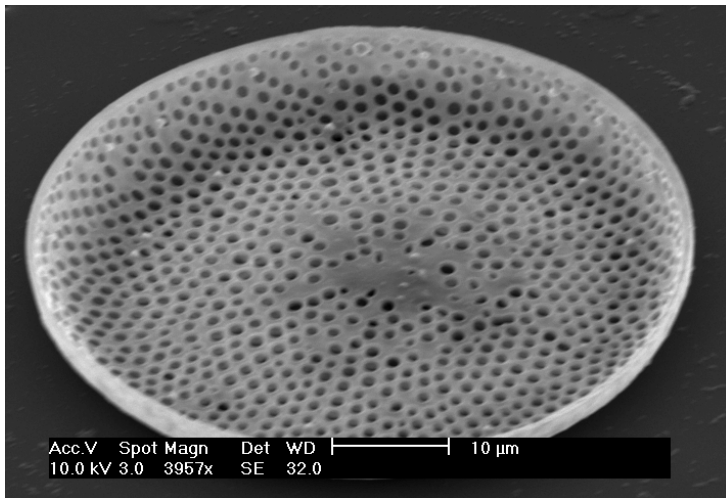
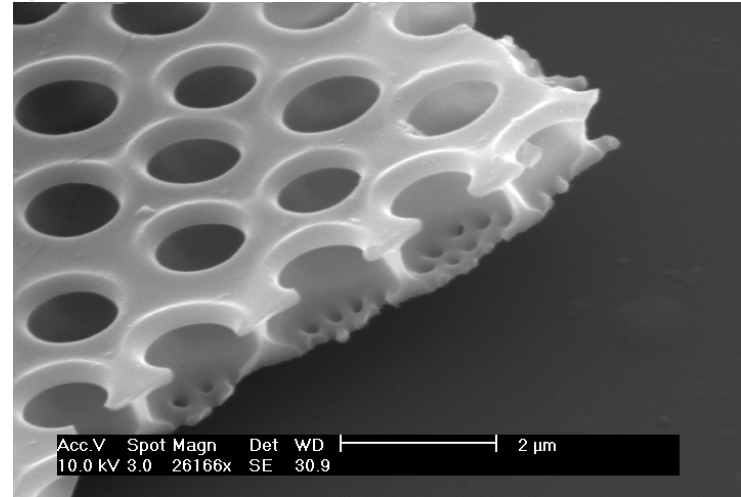
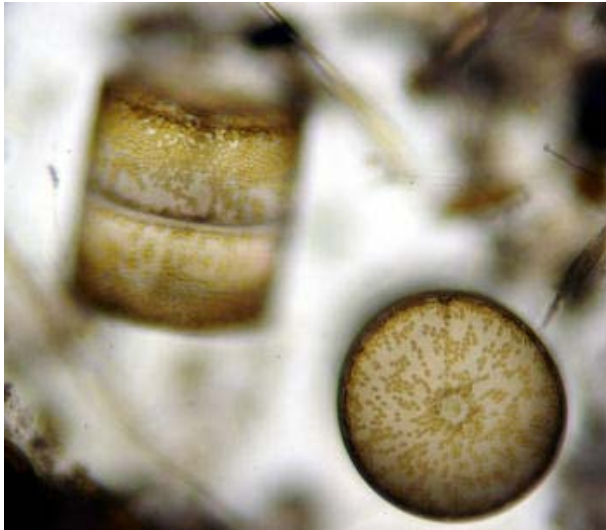
# Fluid & Thermal Engineering

- Computational Fluid Dynamics
- Refrigeration and Air Conditioning
- Solar Thermal Energy
- Internal Combustion Engines
- Microfluidics, micro-heat exchangers
- Biomimetics
- Aerodynamics

Approximately 13 academic/research staff  
30 research students

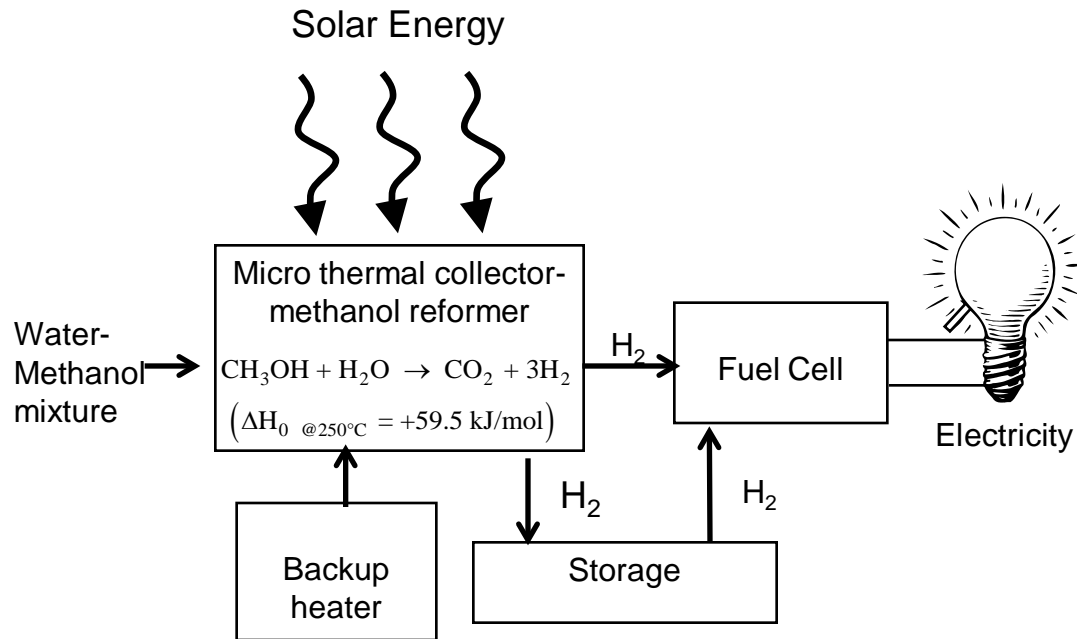


# Biomimetics and nanofluidics- Marine diatom filters



# Fluid & Thermal Engineering

- Solar Thermal Energy
  - Development of solar energy products



Large outdoor test laboratory for solar thermal energy products





# Internal Combustion Engines-high fidelity simulation

- The IC engine will remain dominant for the coming decades.
  - **Efficiency** and **emissions** improvements must continue.
  - Must be optimized to **alternative fuels**.
- The traditional trial and error design process is too slow.
  - Computational models must be improved.
  - **Develop** and **apply** computational models for multi-scale, multi-physics reacting flows

DNS methane-air premixed jet flame

