



(drawing from „Rheinische Post“)

Research Team name: Biomimetic Materials

Presenter name: Neil Shirtcliffe

(Inofficial Competition Newest University entrant:- Foundation Jan 2010
handover this month (pretend deadline)(2nd?))

Team Presentation – Annual Workshop, COST Action MP1106
Dublin, September, 2012



Team's general info

Research Team Name: Biomimetic Surfaces and Interfaces

Number of team members: 1 (4)

Neil Shirtcliffe, Chemist/Materials (though not always obvious) (started nearly 1 year ago)

- 3 M.S. student (thesis)
 - 3-8 M.S. projects
 - 2x1/2 Technician/Postdoc freetime only
 - Amir Fahmi, Kerstin Koch
-
- ❖ MS Bionics/Biomimetics is an Engineering qualification, but our students typically have a random science or engineering BSc.



Relevance to MP1106

Research interests related to MP1106

- Superhydrophobic surface structures
 - Superhydrophilic surface structures
 - Electrospinning
 - Phase separation
 - Emulsion Polymerisation
 - Biological surfaces
 - Biological materials
- As mentioned in a previous talk WG2 Materials is the best fit to my research brief, biomimetic materials. Coatings, interactions with biology, interactions with water, structured interfaces.

• Surface Innovations

Lab description

Basic facilities, equipment, devices etc

- SEM
- Contact Angle with high speed camera
- High speed cameras
- Optical Spectroscopy UV-Vis, FTIR, Raman, Fluorescence
- Zetapotential
- Thermal Techniques DSC, TGA
- Electrospinning
- (Cell culture)
- Mask Aligner
- Spin Coater
- Potentiostat
- Materials testing (tba)





Projects

Description of projects related to MP 1106

Electrospinning of biohybrids

Electrospinning (semi)natural polyesters with added inorganic components to form Hybrid nanofibres.

Projects

#1 project :

Title: Electrospinning of biohybrids

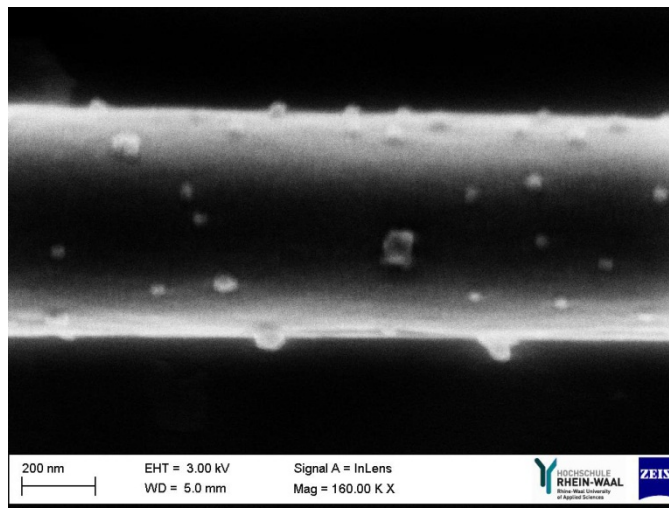
Duration: 4 Months X 2

Funding organization: Internal (so far)

People involved and their function :M. Azad, T. Islam MSc students

Facilities/equipment : Electro spray + characterisation

Most interesting results : _____





Projects

#2 project :

Title: Drop Splashes

Duration: 5 months

Funding organization: Erasmus

People involved and their function: R. Choudhury MSc student

T. Gilet (main supervisor) Liege

Facilities/equipment : High speed video camera

Most interesting results : Just started, getting student to Brussels is the most interesting result so far



Projects

#3 project :

Title: Beer Brewing

Duration: 4 Months

Funding organization:

People involved and their function (*PhDs, postdocs, technicians etc*): _____

Facilities/equipment (*if not mentioned in Basics; may add photo*): _____

Most interesting results (*1 or 2 plots max*): Received 3rd place, mostly due to a foam stability problem _____



Projects

#4 project :

Title: Bubbling at superhydrophobic/superhydrophilic surfaces

Duration: 8 Months

Funding organization: Internal Currently

People involved and their function:

Facilities/equipment : Students are supposed to build this (little evidence so far)

Most interesting results:



Topics for Research Proposal

#1 Topic

Title Phase transition at highly structured surfaces

Duration (*if estimated*): _____

Expertise required: _____

Facilities/equipment required: _____



Topics for Research Proposal

#1 Topic

Promotion images & text: Wetting and non-wetting surfaces in microfluidic devices to modify two phase flow characteristics.

Duration (*if estimated*): _____

Expertise required: _____

Facilities/equipment required: _____



Topics for Research Proposal

#2 Topic

Title: Nanomaterials for soil remediation

Promotion images & text:

Duration: _____

Expertise required: Chemistry, physics, soil hydrology

Facilities/equipment required: Surface characterisation; microfluidics/emulsion polymerisation.

Depending upon scope, currently aimed at German internal system but this depends strongly upon internal politics and international partners, particularly those entitled to award PhD.s



Thank you for your attention