

Biomimetic studies regarding a structural approach to multifunctional nanomaterials in Fraser's Hill, Malaysia, 2014

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The beautiful natural environment in Malaysia provides ample inspiration for biomimetics. In the biomimetics research methodology, materials, structures and processes from living nature are investigated regarding their inspirational potential for applications in science, engineering, architecture and the arts (to name a few), the underlying principles are abstracted and transferred to the respective fields.

In the upcoming expedition to Fraser's Hill (October 2014) we intend to specifically investigate structural colors in plants and animals, as well as microorganisms, for emerging lab-on-a-chip and MEMS sensing applications.

We require a cheap, fast and simple method to produce multifunctional, responsive nanostructures for coloration. The function of nanostructures for coloration predominantly depends on structure rather than material. This allows for the use of non-toxic ingredients for their production, with less waste and less ethical, legal, health and social issues – a point that is of increasing importance in nanotechnology policies around the globe.

We expected to identify further inspiring organisms at this expedition.

Participants from our side are two Malay PhD students (one from biology, one from engineering) who have very successfully been working together on the highly interdisciplinary field of biomimetics, and Prof. Ille as their PhD supervisor.

This expedition will deepen our knowledge on unique organisms in Fraser's Hill, bond the group together even further, establish new contacts with other researchers in Malaysia and increase our friendship and mutual understanding – important factors in multidisciplinary approaches, where intense listening and understanding of concepts from different fields of research are so important to generate a synergistic approach that promises to pave the way for the successful implementation of biomimetic approaches in the research landscape in Malaysia.