# **Before Contact Session #4**

Before Contact Session#4, please

1***) collect some data of biomimetic/bio-inspired materials*** (3-10 materials & their properties into the table)

2) ***read Chapter 5 from Course book*** (*M. Ashby et al., Nanomaterials, Nanotechnologies and Design – An Introduction for Engineers and Architects*) and

3) ***watch video Tutorials of CES Edupack***.

## **Collect data**

Start to collect data on biomimetic materials of your interest. You can use the table below but note:

1. You can delete and add columns and lines to/from the table, based on data you find.
2. You do not need to have all different properties for each material (one / material is enough)
3. It is possible that all the data on your chosen materials is not available, thus you may need to estimate and calculate some properties based on some known materials (density of composite for instance). Please include all the sources of information in the table.
4. The materials can also be bio-inspired but at least one material has to be truly biomimetic.
5. Remember to have references so that you can later on to check more details and refer to these materials.

You may choose different types of materials or then focus on a certain family of materials, for example those mimicking the shark skin. Eventually, the data will be used to create comparison between the biomimetic materials and the current engineering materials in your upcoming assignments and Group Work.

You may also collect data on technologies, and put more emphasis on the price, processes and environmental aspects. However, the table MUST contain also some biomimetic materials (not only technologies or bio-inspired systems). After this exercise session, you will continue collecting the data.

Table: Example of collection of material properties for biomimetic and bio-inspired materials.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Property 1 (units)** | **Ref.** | **Property 2****(units)** | **Ref.** | **Price****(€/kg)** | **Reference** | **Property 3****(units)** | **Ref.** | **Add here more columns for properties (remember units)** |
| **Biomimetic material #1** | 5.8 | Bing et al. |  |  | 120-160  | Sigma-Aldrich |  |  |  |
| **Bioinspired material #2** |  |  | 1.4 | Zoo et al. |  |  |  |  |  |
| **Bioinspired material #3** | 7.8 | Hau et al. |  |  |  |  | 35-100 | Williamson et al. |  |
| **Bioinspired material #4** | 12 |  | 3.9 | Niinistö et al. | 3-30  | Sigma-Aldrich |  |  |  |
| **Biomimetic material #5** |  |  | 8.7 | Zauhur et al. |  |  |  |  |  |
| **[add here more lines if you have more materials]** |  |  |  |  |  |  |  |  |  |

## **Watch video tutorials**

Before the session, familiarize yourself with the CES Edupack through video tutorials. <https://grantadesign.com/education/students/video-tutorials/>

### **Getting started videos:**

**Getting started 3:16**

**How to select materials 2:57**

**Advances databases 3:50**

**CES EduPack Tools - Add your own records 3:18**