

**Teeth and injectors across scales: Inspiration from biology for emerging grinders, cutters and drills with optimized tribological performance**

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Learning from living nature can give valuable insight to the development of novel engineering tools. This presentation will introduce teeth and injectors in organisms, their materials and structures, the relation between structure and function, and summarize common underlying principles for transfer to engineering applications. This attempt will be performed across length scales, and thereby provide stimuli for the optimization of existing as well as the development of emerging grinders, cutters and drills with optimized tribological performance for applications in fields such as agriculture, engineering, medicine and manufacture.

Razor sharp micrometre small teeth from giant leeches, organic glass needles filled with poison and nanoscale injectors built with atomic precision, just some tens of nanometres in diameter, are amongst the examples that illustrate that knowledge about teeth and injectors on all length scales is readily available in the scientific literature. All we need to do to make it accessible for the tribologists is to integrate this knowledge across fields, and present it in a way that is understandable, in terms of language and concepts. For successful implementation of nature's wisdom in tribological applications we need to take time to discuss with specialists from other fields. The best approach would be establishment of a tree of knowledge that is freely accessible by people from all levels of education and fields of expertise.