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# Materials and Design

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## Editorial for SI: Materials, design and tribology

Tribology is a language of mechanical engineers, covering friction, wear, and lubrication sciences. The interaction of the asperities in contact controls friction, wear and lubrication behaviour of the rubbed surfaces. During the sliding, modifications on both surfaces take place due to the frictional heat and shear force in the interface region that in turn influences surface topography of the interacting materials. Several industrial components are exposed to such tribological loading during the service and in most of the failures occur due to the tribological loading. Therefore, understanding the tribological performance of materials becomes an essential consideration in the material selection for new component design, i.e. equal to the other fundamental properties. Under tribological loading, there are several parameters and conditions effect the tribological behaviour of materials, i.e. operating parameters (applied load, sliding distance and sliding velocity), contact conditions (dry/wet), contact mechanisms (point, line and area) and microstructure of materials.

In the current decade, numerous materials have been developed such polymers and metals composites and they found their applications in several sectors. In human body, there is high interest in

developing materials in order to replace some parts, i.e. joints of knee and hip. On the other hand, there is a high demand for replacing petroleum derived raw materials with renewable plant-based fibres in production of valuable materials which are quite significant in the social and environmental viewpoints. Bio-polymers and polymer composites based on bio-reinforcements are other attractive research areas in the current decade.

In this special issue, emphasis has been made on the tribological performance of advanced materials covering bio-materials, materials for human body parts and new metal alloys. The importance of studying the tribological behaviour of such materials is addressed with interest findings. This is very beneficial in material selection and parts design under tribological loadings.

B.F. Yousif  
*Faculty of Engineering and Surveying,  
University of Southern Queensland,  
QLD 4350, Australia*

*E-mail addresses:* [Belal.Yousif@usq.edu.au](mailto:Belal.Yousif@usq.edu.au), [belal.yousif@yahoo.com](mailto:belal.yousif@yahoo.com)