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## Editorial

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**Biographical notes:** Janez Grum is a Professor of Materials Science at the Faculty of Mechanical Engineering, University of Ljubljana, Slovenia. He is also the Founder and Editor-in-Chief of a new journal, the *International Journal of Microstructure and Materials Properties (IJMMP)*. He is the Editor of six NDT conference proceedings, five ASM, Marcel Dekker and Taylor & Francis book chapters and five books with several reprints. He has also published more than 200 refereed journal papers on heat treatment and surface engineering, laser materials processing and materials testing, including non-destructive testing.

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The present issue of the *International Journal of Microstructure and Materials Properties* comprises five spontaneous papers discussing mechanical and microstructure properties of various casting metallic and non-metallic ceramic composites.

The following papers have been included in this issue.

Dasgupta et al. present combined effects of composite making, ageing and extrusion on property improvements in aluminium alloy. The present paper reports attempts made at enhancing the mechanical and wear resistance properties of a commonly used aluminium alloy, the 7075 alloy by different routes. They include:

- 1 making composites
- 2 ageing of the alloy and composite
- 3 extruding the alloy and composite to rods.

A comparison in the properties, including microstructure, hardness, and wear resistant properties, attained by the different routes were attempted. It was found out that making composites drastically increases the hardness of the alloy and extruding them further increased the value marginally, while homogenisation increased the UTS for both the alloy and composite. The presence of dispersoid particles changed the ductile behaviour of the alloy to a brittle failure for composites.

Ben Amar et al. discussed pressure and die temperature effects on microstructure and mechanical properties of squeeze casting of aluminium alloy. Squeeze casting process was carried out on an industrial 2017A aluminium alloy conventionally used for wrought products. The results showed that the finer microstructure was achieved through the squeeze casting. Higher pressures improved the fracture properties and decreased the porosity portion of the cast alloy. It was found that a direct squeeze casting pressure and die temperature gave a good combination of tensile strength, yield strength and elongation.

SitiRabiatull Aisha and Ourdjini studied effect of multiple reflow on intermetallic compounds (IMC) formation with various surface finishes. They used intermetallic

compounds of solder joints made from lead-free Sn-4Ag-0.5Cu on electroless nickel/electroless palladium/immersion gold, electroless nickel/immersion gold, immersion silver and copper surface finishes. The intermetallics growth kinetics showed that the interfacial phase  $\text{Cu}_6\text{Sn}_5$ ,  $(\text{Ni,Cu})_3\text{Sn}_4$  and  $(\text{Cu,Ni})_6\text{Sn}_5$  was controlled mainly by grain boundary diffusion.

Girish et al. worked on wear behaviour of tungsten carbide particles reinforced copper alloy composites as a function of sliding speed and applied loads. The results indicated that wear rate of both the composites and the alloy increased with increase in load and sliding speed. However, the composites exhibited lower wear rate than the alloy.

Masmoudi et al showed the effect of binder on the pharmaceutical tablets capping tendency. They examined the influence of binder in the mechanical behaviour of Trimebutine maleate tablet and emphasised the power of its effect in capping tendency. They developed for the first time two formulas of tablets which differ by the nature of their binder. They carried out a comparative study of the compressional behaviour of the granules obtained by adopting the uniaxial compression technique followed by the Brazilian test. The data obtained showed correlation of mechanical properties of pharmaceutical mixtures.

All papers have been reviewed according to journal procedures and standards. I sincerely thank to all authors for their valuable contributions and having observed all reviewers comments and suggestions.

We sincerely hope that the papers published will be a useful source of information for engineers and researchers at their professional work.