Editorial

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We are delighted to report another increase in the journal impact factor for *Surface Innovations*, which rose from 2.333 in 2019 to 2.845 this year. This is the fourth year in a row that the journal experienced the increase in its impact factor. The top three most-cited papers that contributed to this year's impact factor include:

1) Marmur A, Della Volpe C, Siboni S, Amirfazli A and Drellich JW (2017) Contact angles and wettability: towards common and accurate terminology. *Surface Innovations* 5(1): 3–8, <https://doi.org/10.1680/jsuin.17.00002>.

2) Derakhshandeh MR, Eshraghi MJ, Hadavi MM *et al.* (2018) Diamond-like carbon thin films prepared by pulsed-DC PE-CVD for biomedical applications. *Surface Innovations* 6(3): 167–175, <https://doi.org/10.1680/jsuin.17.00069>.

3) Wen L, Wang X, Liu GQ *et al.* (2018) Novel surface coating strategies for better battery materials. *Surface Innovations* 6(1–2): 13–18, <https://doi.org/10.1680/jsuin.17.00056>.

We would like to take this opportunity to express our appreciation to all contributors who submitted quality manuscripts to *Surface Innovations*, to external reviewers for their hard voluntary work and their valuable comments, and to everyone who cited the *Surface Innovations* papers. The number of submissions continues to rise, allowing us to be more selective in choosing contributions that are more appealing.

This last issue of 2020 features eight original research reports on a variety of topics. In the first contribution, selected as the feature article for this issue, Ghorbanian *et al.*¹ describe a plasma electrolytic oxidation (PEO) method to fabricate aluminum oxide/molybdenum disulfide (Al₂O₃/MoS₂) composite coatings on the surface of 1050 aluminum (Al) alloy, a commonly used alloy in the electrical and chemical industries due to its high electrical conductivity, corrosion resistance and workability. The authors show that MoS₂-incorporated PEO coatings enhance the corrosion resistance of coated alloy, mainly through the formation of solid oxide film with MoS₂ particles that participate in blocking micropores and microcracks.

In the second paper, based on the conception of the circular economy, Hou *et al.*² demonstrate that the waste copper (Cu) etchant can be converted into the tetrahedral copper chloride (CuCl) crystals by using the direct cost-effective electrodeposition

method. Detailed examination of the electrodeposition process allowed the authors to optimize the electrodeposition time with regards to electrochemical lithium (Li)-storage capacity of the CuCl crystals, the anode active material for Li-ion batteries.

Next, Zhu *et al.*³ describe the development of high-performance cathode materials for Li-ion batteries. The authors propose an interesting bismuth (Bi) and chlorine (Cl) co-doping strategy using a sol-gel method to improve the electrochemical performance of lithium vanadium phosphate (Li₃V₂(PO)₃) material. The co-doped materials showed higher discharge specific capacity and charge/discharge cycling performance.

In the fourth paper, Chen *et al.*⁴ demonstrate the preparation of tungsten (W)-doped micro-arc oxidation coating on titanium (Ti) alloy drill pipe by adding sodium tungstate (Na₂WO₄) into electrolytes. To determine the optimum Na₂WO₄ doping concentration, the researchers recorded changes in electrolyte conductivity and its correlation with the hardness and corrosion resistance of the fabricated coatings. The study reveals the beneficial effect of W doping on hardness and corrosion resistance of the coating, with optimum doping concentration in the electrolyte that is nearly at electrolyte conductivity peak.

In the study by Hua *et al.*⁵ the researchers explored the preparation of a CoNiCrAlY bonding layer on a nickel (Ni)-based superalloy by using atmospheric plasma-spraying technique and laser treatment. The authors studied the effect of laser shock times on the coating hardness, high-temperature oxidation resistance, and residual stress distribution in a thermally grown oxide film. They show that laser shock processing improves the service life of thermal barrier coating through strengthening the material surface, improving the fatigue resistance and corrosion resistance of the material.

Monoclinic α -bismuth (III) oxide (α -Bi₂O₃) is an attractive photocatalytic material due to its nontoxicity and suitable band gap of 2.6–2.8 eV. In the sixth contribution to this issue, Dong *et al.*⁶ introduce a new method of hydrothermal process with L-arginine as a biomimetic template in preparation of porous α -Bi₂O₃ having nanosheet structure. The formulated photocatalyst exhibited high crystallinity and outstanding optical performance. The photocatalytic activity of α -Bi₂O₃ was evaluated against rhodamine B, tetracycline hydrochloride and methyl orange, revealing high photocatalytic degradation performance against organic pollutants under visible light.

In the next contribution, Gerullis *et al.*⁷ describe atmospheric-pressure plasma treatment of powdered lubricants for a better dispersibility of hydrophobic polymers in aqueous media. The authors describe the incorporation of polymeric particles into a Ni-based coating and study abrasion-wear properties of these composite coatings. They show that the particles of polymers such as polyetheretherketone and polyimide having plasma-modified oxygen (O)-enhanced surfaces can replace fluorine (F)-containing surfactants in the electrolytes used to formulate Ni-based coatings. The Ni-phosphorus (P) layers with embedded polymeric particles show improved wear-resistance behavior.

In the final paper, Cheng *et al.*⁸ examined flammability of cotton fabrics after treatment with phytic acid flame retardant, a naturally occurring chemical that can compete with synthetically engineered chemicals. The phytic acid-treated cotton fabric self-extinguished in the burning test, preserving its textile structure. The treatment greatly reduced both heat and smoke generation ability of cotton, together with enhanced thermal stability at high temperature, although the fabric suffered from poor washing resistance.

We hope that you will find the contents of this issue attractive and appealing to your scientific and engineering interests. We welcome any comments and suggestions from you, and we look forward to receiving exciting new reports on your discoveries and innovations.

REFERENCES

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