Editorial

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We are delighted to report another increase in the journal impact factor for *Surface Innovations*, which rose from 2.845 in 2020 to 3.016 this year. This is the fourth year in a row that the journal has experienced an increase in its impact factor as demonstrated in Figure 1.

The top three most-cited papers that contributed to this year impact factor include:

1. M.R. Derakhshandeh, M.J. Eshraghi, M.M. Hadavi, M. Javaheri, S. Khamseh, M.G. Sari, P. Zarrintaj, M.R. Saeb, and M. Mozafari, Diamond-like carbon thin films prepared by pulsed-DC PE-CVD for biomedical applications, *Surface Innovations* 6(3), 2018, 167–175.
2. M.R. Derakhshandeh, M.J. Eshraghi, M. Javaheri, S. Khamseh, M.G. Sari, P. Zarrintaj, M.R. Saeb, and M. Mozafari, Diamond-like carbon-deposited films: a new class of biocorrosion protective coatings, *Surface Innovations* 6(4-5), 2018, 266–276.
3. M. Sadeghi-Kiakhani, S. Khamseh, A. Rafie, S.M.F. Takieh, P. Zarrintaj, and M.R. Saeb, Thermally stable antibacterial wool fabrics surface-decorated by TiON and TiON/Cu thin films, *Surface Innovations* 6(4-5), 2018, 258–265.

We would like to take this opportunity to express our appreciation to Professors Masoud Mozafari, and Mohammad Reza Saeb for submitting the above-listed quality leading contributions on cutting-edge research to *Surface Innovations*. These papers serve as examples of quality that the journal seeks in every new submission.

We also thank all other contributors who submitted manuscripts to *Surface Innovations*, to external reviewers for their hard voluntary work and their valuable comments, and to everyone who reads and cites the *Surface Innovations* papers.

The number of submissions continues to rise, allowing us to be more selective in choosing contributions that are more appealing to innovators. Additionally, as a result of the impact of the growing pool of submissions, the publisher has decided to expand the content of the journal from 5 to 6 issues in 2022. We hope to fill the additional issue with interesting reports on surface and interfacial innovations and discoveries.

In this closing issue of 2021 we offer seven original research reports on antimicrobial coating, magnetic membranes,

photocatalytic nanoparticles, the use of iron phosphide as an energy-storage material, low-reflectivity coating for surgical instrumentation, inhibitor of corrosion, and the use of expired medication in lithium-based batteries.

In the first contribution, selected as the feature article for this issue, Centa *et al.* (2021) describe a novel active nanostructured antimicrobial composite coating made of poly(vinylidene fluoride-co-hexafluoropropylene) and polyvinylpyrrolidone as a matrix and molybdenum trioxide nanowire as a filler. The antimicrobial activity of the coating is demonstrated against Gram-positive and Gram-negative bacteria, yeasts, and molds. This novel nanocomposite coating is especially appealing for contact surfaces as it is activated by moisture, preventing colonization of the surface by microorganisms.

Polymeric magnetic membranes are used in cell culture studies to mediate and investigate the behavior of cells. In a new contribution, the research team from Turkey demonstrates fabrication of magnetic polydimethylsiloxane membranes with uniformly distributed embedded magnetite particles. Superparamagnetic magnetite particles with a diameter of 6–10 nm were synthesized using iron (II) chloride tetrahydrate and iron (III) chloride hexahydrate, and then homogenized uniformly into a silicone elastomer with its curing agent. Such fabricated chemical agent-free membranes were successfully tested for osteoblast cell proliferation and morphology studies.

Silver chloride surface doped with silver (Ag@AgCl) is a plasmonic photocatalyst that acts within the visible-light range and can be used to degrade hazardous organics from water and wastewater. A team of researchers from China invented a novel simple method of synthesizing Ag@AgCl nanoparticles with dimensions of 40–100 nm using silver nitrate and lithium chloride solutions and additions of dimethylacetamide and polyvinylpyrrolidone. The photocatalytic activity of synthesized nanoparticles is exhibited through degradation tests of methyl orange.

Sodium ion-batteries are considered a high specific energy, low cost and high safety alternative to current lithium ion-batteries, if the large diffusion resistance of the sodium ions between the cathode and the anode is significantly reduced. Therefore, current research in the field of sodium ion batteries concentrates heavily on development of new electrode materials such as transition metal phosphides. The research team from Zhengzhou University

Figure 1. Impact factor for *Surface Innovations*

in China describes a unique composite electrode made of a hollow sea-urchin-like iron phosphide on a carbon substrate (FeP@C). This novel electrode material, with high integrity and cycling performance, effectively alleviates volume expansion during sodium ion intercalation and demonstrates high electrical conductivity.

High surface reflectivity of surgical instrumentation that reduces the surgeons' field of vision during interventional procedures is a common problem in the medical field and dentistry. In a new paper, researchers from Colombia tackle this challenge by depositing a low-reflectivity titanium aluminum nitride (TiAlN) coating on stainless steel using the direct-current magnetron sputtering technique. The study demonstrates that the columnar grain morphology of a TiAlN coating not only reduces reflectivity of the surface but also improves the corrosion resistance of stainless steel used for manufacturing surgical and dental instruments.

In the next contribution, an international China-USA team describes the corrosion inhibition performance of an imidazoline quaternary ammonium salt (IM) and octylphenol polyoxyethylene ether (OP) to combat carbon dioxide corrosion of pipeline steel in a sodium chloride solution. The study shows that the mixture of IM and OP molecules promote the formation of a thick, compact adsorption inhibitor layer, which performs significantly better than

when each material is applied separately, revealing synergistic inhibition performance. Fundamental studies also revealed that the IM-OP mixture enhanced interactions between inhibitor molecules and the metal surface, with OP promoting electrons to the metal and IM molecules accepting electrons from the metal surface.

In the last contribution to this issue, the research team led by Prof. Hou from Kunming University of Science and Technology describes their newest invention in their program of utilization of medical waste materials. They converted expired aminocaproic acid, commonly used in the treatment of acute bleeding due to elevated fibrinolytic activity, to zinc aminocaproate with mint-leaf-like flower morphology structures. Fabricated electrodes decorated with these zinc aminocaproate flowers exhibit high electrochemical lithium-storage performance with significant reversible discharge specific capacities.

We are looking forward to your feedback on the content of this issue, as well as other issues of *Surface Innovations*, and we encourage you to submit your exciting new reports on discoveries and innovations.

REFERENCES

1. Gradišar Centa U, Sterniša M, Višić B *et al.* (2021) Novel nanostructured and antimicrobial PVDF-HFP/PVP/MoO₃ composite. *Surface Innovations* **9**(5): 256–266, <https://doi.org/10.1680/jsuin.20.00073>.
2. Erenay B, Garipcan B and Odabaş S (2021) Fabrication of homogeneous magnetic PDMS membranes to mediate cell behavior. *Surface Innovations* **9**(5): 267–276, <https://doi.org/10.1680/jsuin.20.00085>.
3. Guo X, Mahmud S, Zhang X, Yu N and Faridul Hasan KM (2021) One-pot green synthesis of Ag@AgCl nanoparticles with excellent photocatalytic performance. *Surface Innovations* **9**(5): 277–284, <https://doi.org/10.1680/jsuin.20.00089>.
4. Liu X, Zhang W, Zhong S *et al.* (2021) Hierarchical carbon-coated FeP derived from FeOOH with enhanced sodium-storage performance. *Surface Innovations* **9**(5): 285–292, <https://doi.org/10.1680/jsuin.20.00083>.
5. Mejia VHD, Echavarría AM and Bejarano GG (2021) Detailed study of the electrochemical behavior of low-reflectivity TiAlN coatings. *Surface Innovations* **9**(5): 293–307, <https://doi.org/10.1680/jsuin.20.00079>.
6. Han P, Wang X, Yang X *et al.* (2021) Synergistic effect of inhibitor mixture based on enhanced electron transfer. *Surface Innovations* **9**(5): 308–316, <https://doi.org/10.1680/jsuin.20.00095>.
7. Hou H, Lan J, Yao Y *et al.* (2021) The recycling of expired aminocaproic acid injection for mint-leaf-like zinc aminocaproate. *Surface Innovations* **9**(5): 317–323, <https://doi.org/10.1680/jsuin.21.00005>.