Editorial

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I am very pleased to report that we open the fifth year of this project with an updated international Editorial Advisory Board (EAB). Professor Ludmila B. Boinovich will serve as the second Associate Editor to *Surface Innovations* for at least two years. She is one of the most active members of our EAB and has already made a great impact on the content of our journal in the last few years. Together with the ICE Publishing office, we are very pleased that she accepted this new position. Additionally, Dr Kirill Efimenko from North Carolina State University (USA) and Dr Qi Zhao from the University of Dundee (UK) have joined our EAB since the beginning of 2017. I welcome both of them warmly, and hope that they will follow the examples of other EAB members, assisting us in promoting the journal and its content, reviewing and evaluating manuscripts submitted, and contributing their own work to the journal.

We open this first issue with two important contributions prepared by members of the EAB, including myself. In the first paper entitled ‘Contact angles and wettability: towards common and accurate terminology’, an international and interdisciplinary team of scientists led by Professor Abraham Marmur define terms describing contact angles, wettability, super-hydrophobicity and similar terminology.¹ In the second contribution to this issue, Professor Emil Chibowski and his colleagues summarize theoretical fundamentals of the thin-layer wicking method and provide practical guidelines to this important experimental method used in wetting characterization of powder materials.² They also offer directions on determination of solid surface free energy for powder material utilizing the experimental data produced with the thin-layer wicking method.

In spite of a long history and utmost importance in modern technology and materials science, measurements and characterizations of properties of solid surfaces and interfaces suffer from inappropriate experimental protocols and interpretations, especially in recent years. One of the goals of our journal is to lead an international effort in defining terminology and setting standards for experimental protocols related to wettability and other properties of solid surfaces. Through invited contributions, the journal will offer scientific definitions combined with practical recommendations in an effort to combat misconceptions, abuses and misuses of surface chemistry terminology as well as growing misunderstanding and confusion among surface chemistry researchers working around the globe. Both publications prepared by Marmur *et al.*¹ and Chibowski *et al.*² are a result of this initiative that started in 2013 with the first contribution entitled ‘Guidelines to measurements of reproducible contact angles using a sessile-drop technique’.³ We will encourage preparation and submission of similar contributions on appropriate terminology and refined experimental protocols to this journal in

2017 and beyond. New proposals from well-established research laboratories will receive our attention and full consideration.

In the third contribution to this issue, Gątarski and Nowicki theoretically analyze, using the Surface Evolver simulation program, behavior of liquid droplets on patterned heterogeneous surfaces made of parallel and alternating strips having different surface energies.⁴ The strips additionally have increasing width producing a gradient of heterogeneity. The authors show that this gradient pattern reinforces droplet elongation and non-uniform pinning of the droplet base causing unidirectional movement of the droplet. Changes in width of strips produce changes in both advancing and receding contact angles, along with changes in irregularity of the triple line.

Coatings made of phospholipids are explored in surface chemistry and biomaterial laboratories to improve biocompatibility of metals commonly used in dental and orthopedic applications. In the fourth paper of this issue, Yan *et al.* report on stability of monolayers and bilayers of 1,2-dipalmitoyl-sn-glycero-3-phosphocholine, known as DPPC, deposited by the Langmuir–Blodgett/Langmuir–Schäffer (LB/LS) technique on titanium alloy biomaterial in aqueous phase (water, phosphate buffer saline, simulated body fluid and 1% Triton X-100 aqueous solution) at 37°C.⁵ The stability of LB/LS molecular layers is analyzed through contact angle measurements on modified surfaces before and after soaking in aqueous phases. Solid surface free energy of modified implant material is additionally analyzed through Lifshitz van der Waals acid–base and contact angle hysteresis models. The authors found the LB/LS molecular films to be uniform and well packed, with noticeable stability in an aqueous environment.

Magnesium alloys have been heavily investigated for biodegradable medical implants including cardiovascular and orthopedic applications in recent years. Unfortunately, magnesium and many of its alloys dissolve in a host body prematurely. To slow down the biodegradation process, both formulation of more stable alloys and protective surface modifications are explored in many research laboratories. In the fifth paper of this issue, Zhang *et al.* report their findings in corrosion behavior of a commercial AZ31 magnesium alloy, with a surface modified through microarc oxidation.⁶ Through electrochemical testing, they found significant improvement in corrosion resistance of magnesium alloy with microarc oxidation coating as compared to bare alloy in Earle’s balanced salt solution over a period of three weeks.

In the final paper of this issue, Sienkiewicz *et al.* demonstrate synthesis of novel sandwich-type of hybrid material using a sol-gel process.⁷ It is shown that 5 µm silica particles modified with

organosilane can be decorated with irregular silica nanoparticles by taking advantage of formation of silica on silane-modified particle surface and addition of surfactants. These new particles decorated with organic and inorganic structures are wetted by water and are capable of adsorbing hydrophobic organic components, including pharmaceutical drugs, from aqueous solutions, making it an attractive sorbent material in water purification applications.

I hope that the readers will find the content of this issue interesting and rewarding. I would like to wish everyone a very productive and successful 2017.

REFERENCES

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