

## Preface – Selected Papers from UKHTC2019

Yuying Yan<sup>1\*</sup>, Khellil Sefiane<sup>2\*</sup>

1. Faculty of Engineering, University of Nottingham, University Park, NG7 2RD, UK
2. School of Engineering, University of Edinburgh, EH9 3J, UK

We are very pleased to introduce the following selected and peer reviewed papers from the 16th UK National Heat Transfer Conference (UKHTC2019) to *Journal of Bionic Engineering* (JBE), which is related to nature inspired research works on bubbles and drops patterns as well as wettings and heat transfer. The UKHTC2019 conference brought together scientists and engineers, working on a wide range of topics of thermal science and engineering to exchange information on the state-of-the-art and recent developments in areas related to the Conference themes, and to encourage fundamental studies of heat and mass transfer as well as the practical and efficient use of thermal energy. Nature inspired heat transfer is one of the conference themes and the selected papers included for JBE focus on nature inspired solutions of lotus leaf effect, plant capillary effect, and Marangoni effect, etc. The papers were orally presented at UKHTC2019, Nottingham, UK, during the period of 8 – 10 September 2019.

The UK national heat transfer conference organized under the aegis of the UK National Heat Transfer Committee, every two years, is the premier forum in the UK for the local and international heat transfer community to meet, disseminate ongoing work and discuss the latest advances in the Heat Transfer field. It is the first time the UKHTC assigned a session of nature inspired solutions of heat transfer, aims to promote bionic engineering and nature inspired technology in heat transfer and thermal applications.

In recent years, research into nature inspired solutions of thermal and fluids science such as bubbles behaviors, evaporating droplets on patterned surfaces, etc., has grown exponentially since the ability to control droplets' morphology has proven to have significant technological utility in emerging areas of fundamental research and industrial applications. Increasing number of research including recent studies exploring the effect of aerosol in air on Covid-19 pandemic has been reported recently. The seven papers are from six institutions from four countries, reporting recent research progress concerned with the following topics.

- (1) Droplet deposition pattern affected by different heating directions<sup>[1]</sup>;
- (2) Hydrodynamic pattern in drying saline droplet with suspended nanoparticles<sup>[2]</sup>;
- (3) Bubble dynamics and heat transfer on biphilic surfaces: experiments and numerical simulation<sup>[3]</sup>;
- (4) Study on morphological development of fuel droplets after impacting metal surfaces with different temperatures and wettability<sup>[4]</sup>;
- (5) Investigation of droplet evaporation on copper substrate with different roughness<sup>[5]</sup>;
- (6) A Study of the truncated square pyramid geometry for enhancement of super-hydrophobicity<sup>[6]</sup>;
- (7) Geometrical deposits on micro-structured surfaces<sup>[7]</sup>.

### References

- [1] Liu Z Y, Yan Y Y, Wang X, Chen X Y. Droplet deposition pattern affected by different heating directions. *Journal of Bionic Engineering*, 2020, **17**, 795–801.
- [2] Ren J H, Zhong X, Shen L, Duan F. Hydrodynamic pattern in drying saline droplet with suspended nanoparticles. *Journal of Bionic Engineering*, 2020, **17**, 802–808.
- [3] Pontes P, Cautela R, Teodori E, Moita A S, Georgoulas A, Moreira A L N M. Bubble dynamics and heat transfer on biphilic surfaces: Experiments and numerical simulation. *Journal of Bionic Engineering*, 2020, **17**, 809–821.

\*Corresponding author: Yuying Yan, Khellil Sefiane  
E-mail: [yuying.yan@nottingham.ac.uk](mailto:yuying.yan@nottingham.ac.uk); [K.Sefiane@ed.ac.uk](mailto:K.Sefiane@ed.ac.uk)

- [4] Guo L, Gao Y H, Cai N N, Li D G, Yan Y Y, Sun W C. Morphological development of fuel droplets after impacting biomimetic structured surfaces with different temperatures. *Journal of Bionic Engineering*, 2020, **17**, 822–834.
- [5] Wang X, Liu Z Y, Wang L, Yan Y Y. Investigation of droplet evaporation on copper substrate with different roughness. *Journal of Bionic Engineering*, 2020, **17**, 835–842.
- [6] Gong W, Wang Y G, Chen Y Y, Li X, Li K J, Wang Z X, Yan Y Y. A study of the truncated square pyramid geometry for enhancement of super-hydrophobicity. *Journal of Bionic Engineering*, 2020, **17**, 843–850.
- [7] Kubyshkina V, Orejon D, Dover C M, Sefiane K. Geometrical deposits on microstructured surfaces. *Journal of Bionic Engineering*, 2020, **17**, 851–865.