

## Bioinspired micro/nanostructured surfaces with wettability from design to functions

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Biological surfaces provide endless inspiration for design and fabrication of smart materials. It has recently been revealed to have become a hot research area in materials and science world. Inspired by the roles of micro- and nanostructures in the water collecting ability of spider silk, a series of bioinspired gradient fibers has been designed by integrating fabrication methods and technologies such as fluid-coating, electrospinning-electrospraying, and web-assembly, etc., where the “spindle-knot/joint” structures with multiple gradients (e.g., roughness, curvature, etc.) can be realized to achieve functions of droplet transport, fog-harvesting, etc. In addition, the integrative conical spine materials with gradient micro- and nanostructures can be fabricated to achieve the ability of droplet transport in efficiency. Otherwise, the functional surfaces with micro- and nanostructures are developed to achieve the effect of water repellency by methods combining machining, electrospinning, soft lithography, and nanotechnology. These

micro- and nanostructure surfaces with wettability exhibit robust transport and controlling of microdroplets, which would be promising applications.

### Speaker Biography

Yongmei Zheng completed her PhD and currently working as a professor at Beihang University. His research interests are focused on bioinspired surfaces with gradient micro- and nanostructures to control dynamic wettability and develop the surfaces with characteristics of water repellency or fog-harvesting, tiny droplet transport, and so on. She has publications more than 100 SCI papers included in *Nature*, *Adv. Mater.*, etc., with 12 cover stories and a book “bioinspired wettability surfaces: Development in micro- and nanostructures”. Her work was highlight as scientist on *News of Royal Society of Chemistry*, *Chemistry World* in 2014. She is a member of Chinese Composite Materials Society (CSCM), International Society of Bionic Engineering (ISBE). She wins an ISBE outstanding contribution award in 2016 by ISBE.

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