



**Scheme 1** Schematic illustration of the general strategy consisting of three steps to fabricate the orthogonal wrinkles.

From: Weilian Ding, Yang Yang, Yan Zhao, Shichun Jiang, Yanping Cao and Conghua Lu, "Well-defined orthogonal surface wrinkles directed by the wrinkled boundary", *Soft Matter*, Vol. 9, 3720, 2013.



**Professor Yan Zhao**

See:

[https://www.researchgate.net/profile/Yan\\_Zhao75](https://www.researchgate.net/profile/Yan_Zhao75)

Laboratory of Advanced Design and Manufacturing for Vehicle Body, College of Mechanical and Vehicle Engineering, Hunan University, Changsha, China

### Selected Publications:

Yan Zhao, Mei Li and Qinghua Lu, Surface patterns induced by laser irradiation on thin polymer bilayer films, *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 312, 1, (47), (2008).

Yan-Ping Cao, Fei Jia, Yan Zhao, Xi-Qiao Feng and Shou-Wen Yu, "Buckling and post-buckling of a stiff film resting on an elastic graded substrate", *International Journal of Solids and Structures*, Vol. 49, No. 13, pp 1656-1664, June 2012

Weilian Ding, Yang Yang, Yan Zhao, Shichun Jiang, Yanping Cao and Conghua Lu, "Well-defined orthogonal surface wrinkles directed by the wrinkled boundary", *Soft Matter*, Vol. 9, 3720, 2013.

Fei Jia, Yan-Ping Cao, Yan Zhao and Xi-Qiao Feng, "Buckling and Surface Wrinkling of an Elastic Graded Cylinder with Elastic Modulus Arbitrarily Varying Along Radial Direction", *International Journal of Applied Mechanics*, Vol. 6, No. 1, 1450003, February 2014

Yan Zhao, Yanping Cao, Xi-Qiao Feng and Kang Ma, "Axial compression-induced wrinkles on a core-shell soft cylinder: Theoretical analysis, simulations and experiments", *Journal of the Mechanics and Physics of Solids*, Vol. 73, pp 212-227, December 2014

Lei Zhu, Yan Zhao, Shuwen Li, Yuxing Huang and Liren Ban, "Numerical analysis of the axial strength of CHS T-joints reinforced with external stiffeners", *Thin-Walled Structures*, Vol. 85, pp 481-488, December 2014

Peng Xie, Yan Zhao, Qianjin Yue and Andrew C. Palmer, “Dynamic loading history and collapse analysis of the pipe during deepwater S-lay operation”, *Marine Structures*, Vol. 40, pp 183-192, January 2015

Yan Zhao, Xue Han, Guoyang Li, Conghua Lu, Yanping Cao, Xi-Qiao Feng and Huajian Gao, “Effect of lateral dimension on the surface wrinkling of a thin film on a compliant substrate induced by differential growth/swelling”, *Journal of the Mechanics and Physics of Solids*, Vol. 83, pp 129-145, October 2015

Xue Han, Yan Zhao, Yanping Cao and Conghua Lu, “Controlling and prevention of surface wrinkling via size-dependent critical wrinkling strain”, *Soft Matter*, Vol. 11, No. 22, pp 4444-4452, 2015

Chuanyong Zong, Yan Zhao, Haipeng Ji, Jixun Xie, Xue Han, Juanjuan Wang, Yanping Cao, Conghua Lu, Hongfei Li and Shichun Jiang, Patterning Surfaces on Azo-Based Multilayer Films via Surface Wrinkling Combined with Visible Light Irradiation, *Macromolecular Rapid Communications*, 37, 15, (1288-1294), (2016).

Yan Zhao, Jing Li, Yan Ping Cao and Xi-Qiao Feng, “Buckling of an elastic fiber with finite length in a soft matrix”, *Soft Matter*, Vol. 12, No. 7, pp 2086-2094, 2016

Chuanyong Zong, Yan Zhao, Haipeng Ji, Xue Han, Jixun Xie, Juanjuan Wang, Yanping Cao, Shichun Jiang and Conghua Lu, Tuning and Erasing Surface Wrinkles by Reversible Visible-Light-Induced Photoisomerization, *Angewandte Chemie International Edition*, 55, 12, (3931-3935), (2016).

Zhi-Chun Shao, Yan Zhao, Wanyu Zhang, Yanping Cao and Xi-Qiao Feng, “Curvature induced hierarchical wrinkling patterns in soft bilayers”, *Soft Matter*, Vol. 12, No. 38, pp 7977-7982, 2016

Yan Zhao, Zhi-Chun Shao, Guo-Yang Li, Yang Zhen, Wan-Yu Zhang, Bo Li, Yanping Cao and Xi-Qiao Feng, “Edge wrinkling of a soft ridge with gradient thickness”, *Applied Physics Letters*, Vol. 110, No. 23, 231604, 5 June 2017

Huakun Wang, Yang Yu, Jianxing Yu, Chenghang Jin, Yan Zhao, Zhiyuan Fan and Yu Zhang, “Effect of 3D random pitting defects on the collapse pressure of pipe – Part II: Numerical analysis”, *Thin-Walled Structures*, Vol. 129, pp 527-541, August 2018

Hui Liang, Yan Zhao and Qianjin Yue, “Experimental study on dynamic interaction between pipe and rollers in deep S-lay”, *Ocean Engineering*, Vol. 175, pp 188-196, 1 March 2019

Yan Zhao, Hanlin Zhu, Chao Jiang, Yanping Cao and Xi-Qiao Feng, “Wrinkling pattern evolution on curved surfaces”, *Journal of the Mechanics and Physics of Solids*, Vol. 135, Article 103798, February 2020