

1 **A crosslinked silicone coating adjusted by lubrication**  
2 **additive with promising antifouling and ice nucleation**  
3 **inhibition performance**

4

5 Yuxin Du<sup>a</sup>, Jiawei Tang<sup>a</sup>, Rumin Li<sup>a, b\*</sup>, Jingyuan Liu<sup>a, b</sup>, Rongrong Chen<sup>a, b</sup>, Jing  
6 Yu<sup>a, b</sup>, Peili Liu<sup>a\*</sup>, Jun Wang<sup>a, b</sup>

7 <sup>a</sup> Key Laboratory of Superlight Materials and Surface Technology, Ministry of  
8 Education, College of Materials Science and Chemical Engineering, Harbin  
9 Engineering University, Harbin 150001, China

10 <sup>b</sup> Nanhai Institute of Harbin Engineering University, Hainan 572024, China

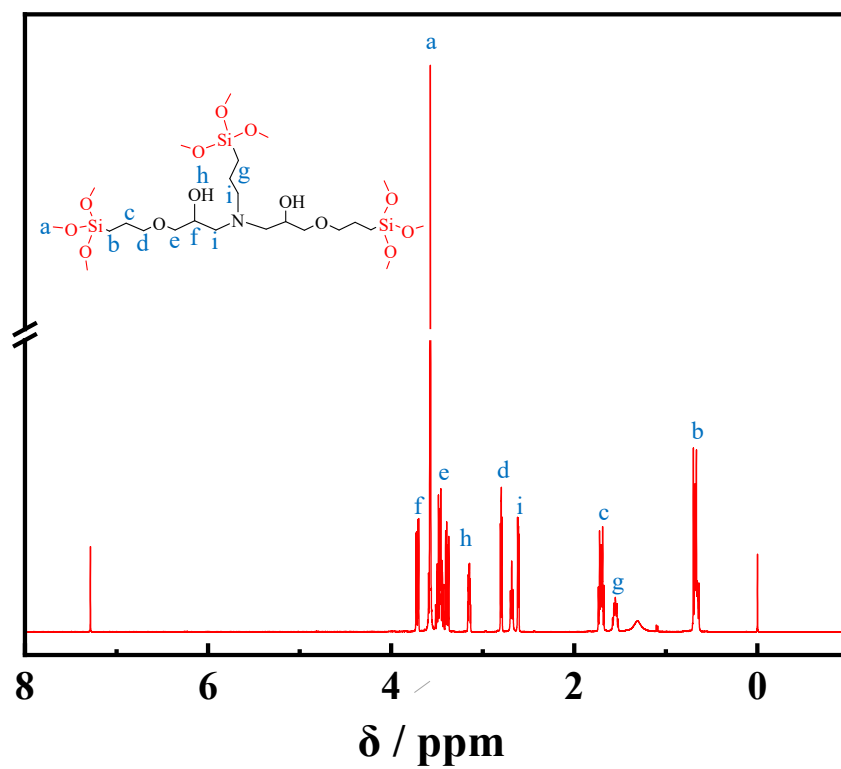
11 E-mail: lrm1888@hotmail.com, liupeili@hrbeu.edu.cn

**Table S1.** Abbreviations in text.

Epoxy	EP
Polyurethane	PU
Self-polishing copolymers	SPCs
Foul release coatings	FRCs
Polytetrafluoroethylene	PTFE
( $\gamma$ -Aminopropyl) trimethoxysilane	GPTMS
3-Glycidyloxypropyltrimethoxysilane	APS
Polysilicon methoxyl curing agent	MCA
Nuclear magnetic resonance spectroscopy	NMR
Contact angle	CA
X-ray photoelectron spectroscopy	XPS
Attenuated total reflex portal	ATR-FTIR
Atomic force microscope	AFM
<i>Halamphora sp.</i>	<i>Ha. sp.</i>
<i>Nitzschia closterium</i>	<i>N. closterium</i>
Ice adhesion strength	IAS

**Table S2.** Average droplet diameter on coating surface.

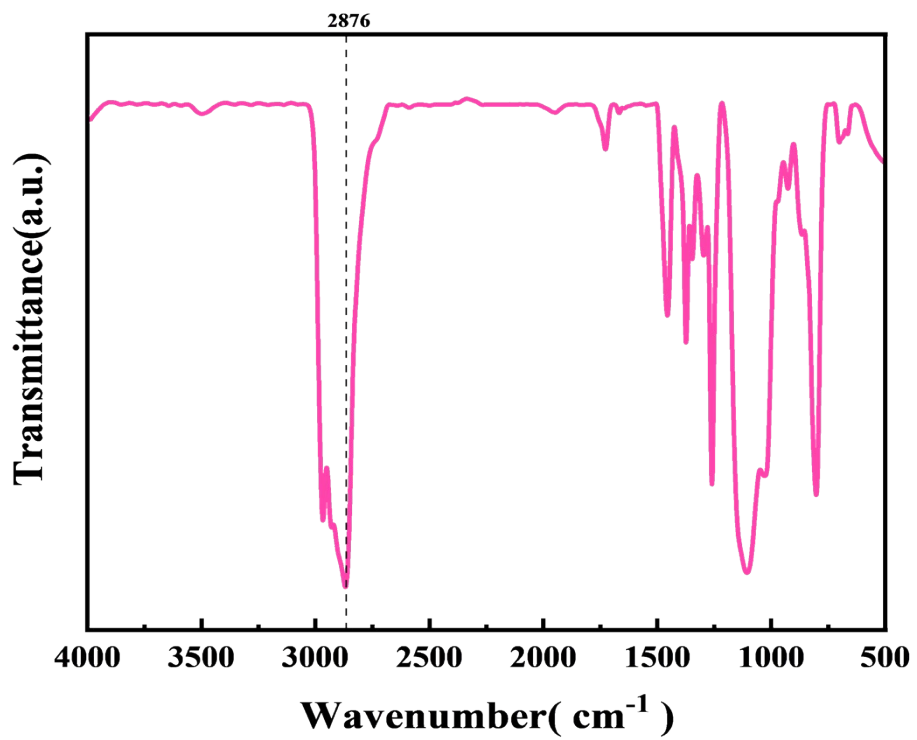
Samples	Droplet diameter ( $\mu\text{m}$ )
B-PDMS <sub>B1</sub>	75
B-PDMS <sub>B2.5</sub>	96.5
B-PDMS <sub>B5</sub>	139.5
B-PDMS <sub>B10</sub>	345.5



16

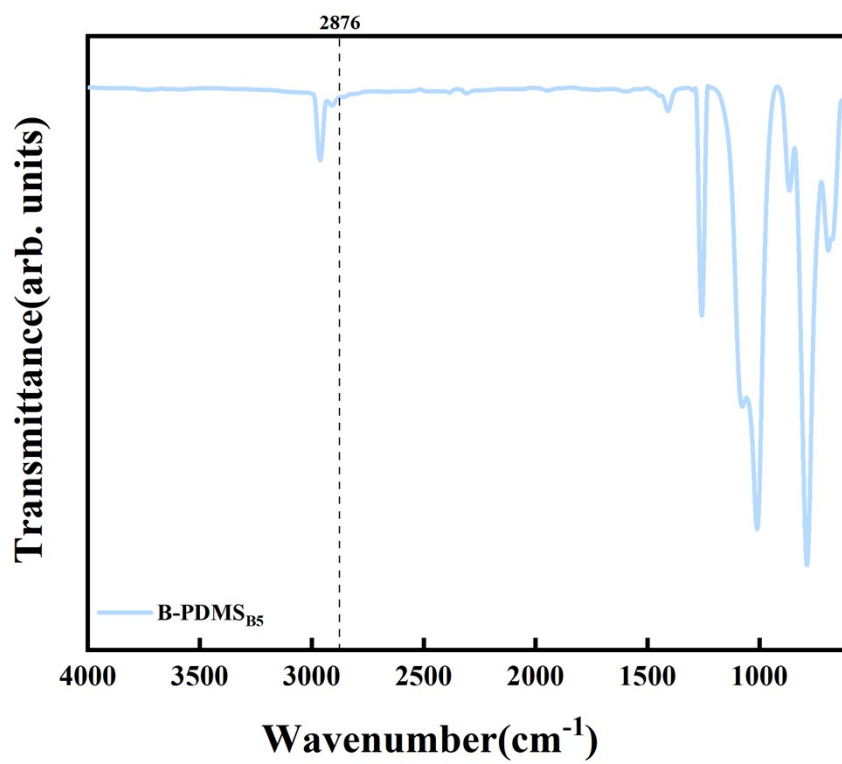
17

**Figure S1.** <sup>1</sup>H NMR spectrum of the MCA.



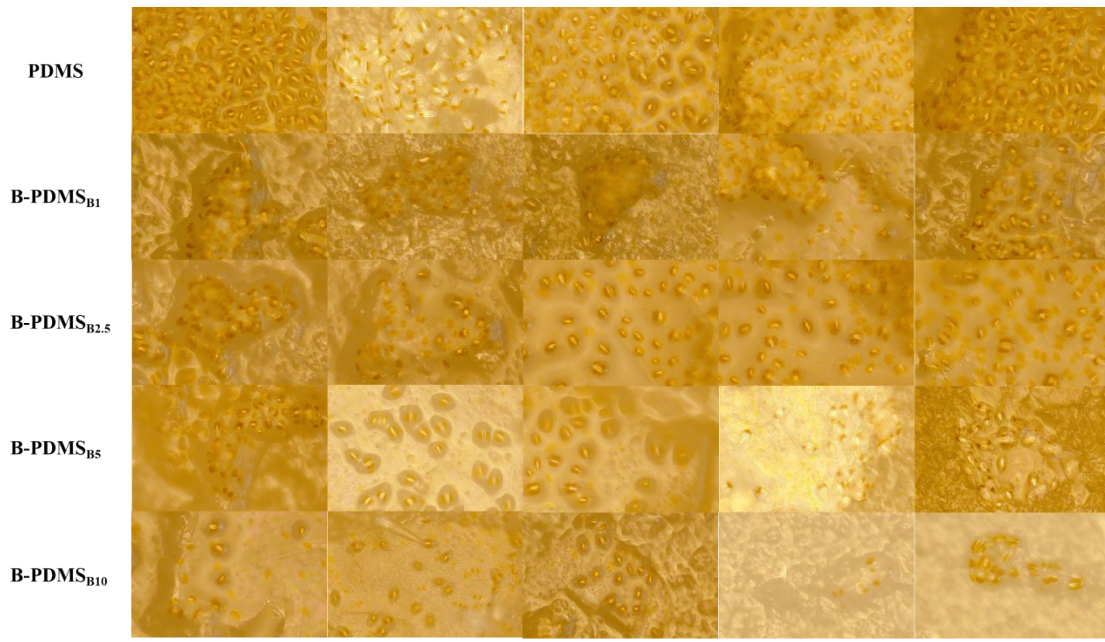
18  
19  
20

Figure S2. FT-IR spectra of BYK331.



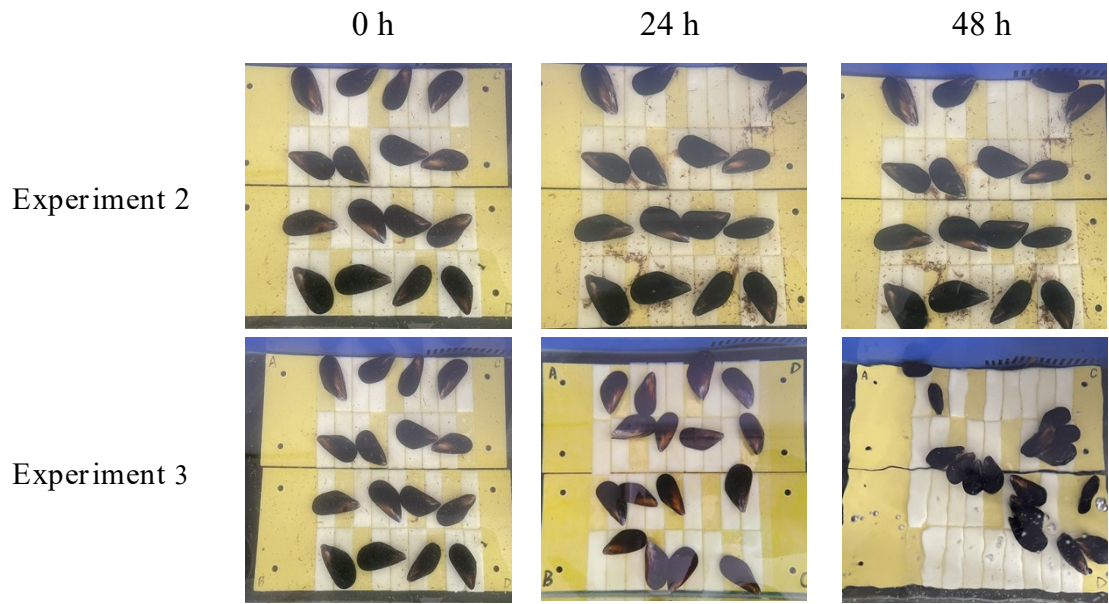
21  
22  
23

**Figure S3.** ATR-FTIR spectra of B-PDMS<sub>B5</sub> (bottom).



24

25 **Figure S4.** Microscope images of different coatings immersed in *Ha. sp.* solution for 24 h (visual  
26 fields 2-6).



27  
28  
29

**Figure S5.** The image of the position of the mussels between 0-48 h.



**Table S3.** XPS results showing elemental surface compositions.

Element	PDMS	B-PDMS <sub>B5</sub>
Si	22.09	24.72
O	51.38	53.27
C	26.53	22.01

32 **Table S4.** Summary of the ice adhesion strength and other anti-icing results in the literature.

Type of the coating	Ice adhesion strength (kPa)	Ice adhesion measurement conditions	Freezing times	Freezing times measurement conditions	Ref.
Amphiphilic IL-based	13.3 ± 8.6	-20 ° C	-	-	[55]
Organogel	6.5	-10 ° C	-	-	[56]
Supramolecular polymeric based	38.9	-15 ° C	339 s	-15 ° C	[57]
Polymeric based	85	-19 ° C	129 s	-15 ° C	[58]
This study	5	-20 ° C	600 s	-20 ° C	-