

Submission Date: 04/15/2020

2019 Academic Year Bio-SPMs Collaborative Research Research Report Summary

Title of the research project		Hydration layer measurement of different surface hydrophobicity in graphene-deposited mica surface	
PI (Person in charge of the research project)	Name	Chih-Wen Yang	
	Affiliated Institution and Department/Division/etc.	Institute Of Physics, Academia Sinica, Taiwan	
	Position	Research Specialist	
Bio-SPMs that you used (Check the boxes)		<input checked="" type="checkbox"/>	Super-resolution AFM (FM-AFM/3D-AFM)
		<input type="checkbox"/>	High-speed AFM
		<input type="checkbox"/>	SICM
Collaborative NanoLSI Faculty Members		Prof. Takeshi Fukuma	

Describe the summary of the research project

- We compared the 3D force measurement of hydration layers on two kinds of degassed and non-degassed solutions (DI water and PBS buffer solution) by using the flow-through system for controlling the concentration of dissolved gas molecules in liquid environment.
- In DI water: the spacing of hydration layers measured in degassed water is clearly smaller than that obtained in non-degassed water.
- In PBS solution: for imaging on order structures formed on HOPG, 3D force maps reveal that the local distribution of oscillation force profiles on top of the stripes and in between them.
- The results about order structures formed on HOPG surface in degassed and non-degassed PBS buffer solutions give us the idea that the PBS buffer solution probably helps to form the interfacial order structures.
- *We will repeat these experiments in PBS solution to check if the ion molecules can help the formation and stability of interfacial order structures.*

*This form (Form 4) will be open on the NanoLSI website in the following academic year.

*Note that this form should be prepared in one A4-size paper.

*Submission Deadline: May 10, 2019 (Friday). **Submit it as a PDF file.**

*Submission Destination: the person in charge of Bio-SPMs collaborative research at WPI-NanoLSI, Kanazawa University (kunioka@staff.kanazawa-u.ac.jp)