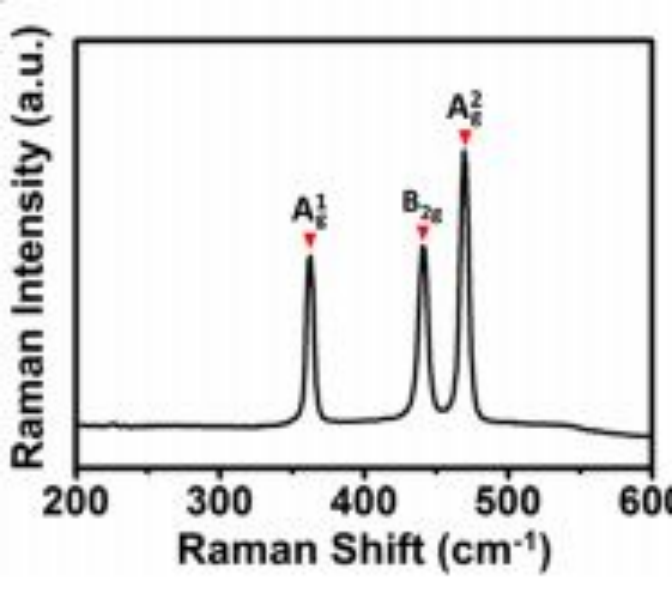
Application of black phosphorus nanodots to live cell imaging

Sample Preparation

BP nanodots were obtained by exfoliation with a modified ultrasonication-assisted solution method. Briefly, BP (0.4 g, 12.8 mmol) was dispersed in deionized water by ultrasound sonication for 30 min to form several-layered BP nanodots. The 10 mL supernatant of BP suspension was transferred in fresh deionized water, and ultrasound sonicated for 10 min. These steps were repeated 3 times, and finally, BP nanodots were obtained.

Analytical Results

Raman spectroscopy (RS) was conducted because the BP typically exhibits specific bands, such as A_g^1 , A_g^2 and B_{2g} modes of phosphorene. The noticeable bands were observed at 362, 440 and 469 cm− 1 , which were attributed to the A_g^1 , A_g^2 and B_{2g} modes of phosphorene as reported in several previous studies.



In addition, the sharp Raman features in the spectrum implied that the BP nanodots were unique orthorhombic crystalline phosphorus structure. This was also confirmed by XRD pattern.

Yong Cheol Shin , Su-Jin Song , Yu Bin Lee , Moon Sung Kang, Hyun Uk Lee , Jin-Woo Oh, Dong-Wook Han, (2018), *Application of black phosphorus nanodots to live cell imaging* , Biomaterials Research, 22:31