## Study of plant leaf-derived graphene quantum dots through magnetic force microscopy

Chiashain Chuang<sup>1, #</sup>, (D) Masahiro Matsunaga<sup>1,#</sup>, Prathik Roy<sup>2</sup>, (D) Rini Ravindranath<sup>3</sup>,

Huan-Tsung Chang<sup>3</sup>, Chi-Te Liang<sup>3</sup>, and Nobuyuki Aoki<sup>1</sup>

Chiba Univ.<sup>1</sup>, Univ. of Canterbury<sup>2</sup> and National Taiwan Univ.<sup>3</sup>

E-mail: chiashain@gmail.com

**#:**These authors have contributed equally.

The magnetic property in graphene quantum dots (GQDs) comes from the zigzag edge of spin effect due to the theoretical predictions [1]. Plant leaf-derived GQDs have revealed excellent photoluminescent property in addition to unusual magnetic property due to its extreme small nano-scale size (< 10 nm) [2-3]. We have studied the magnetic microstructure of different plant-leaf-derived GQD clusters (100 nm < d < 500 nm) spin-coated on SiO<sub>2</sub>/Si chip by magnetic force microscopy (MFM) and observed evidences of magnetic property at room temperature as shown in Fig. 1 in the GQD clusters. These results could potentially lead to carbon-based materials for magnetic information technology, a great advantage for future graphene-based spin manipulation nanodevices.



Figure 1: (a) Magnification of AFM image and the line profile (blue line). (b) Magnification of MFM image and the line profile (blue line).

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