

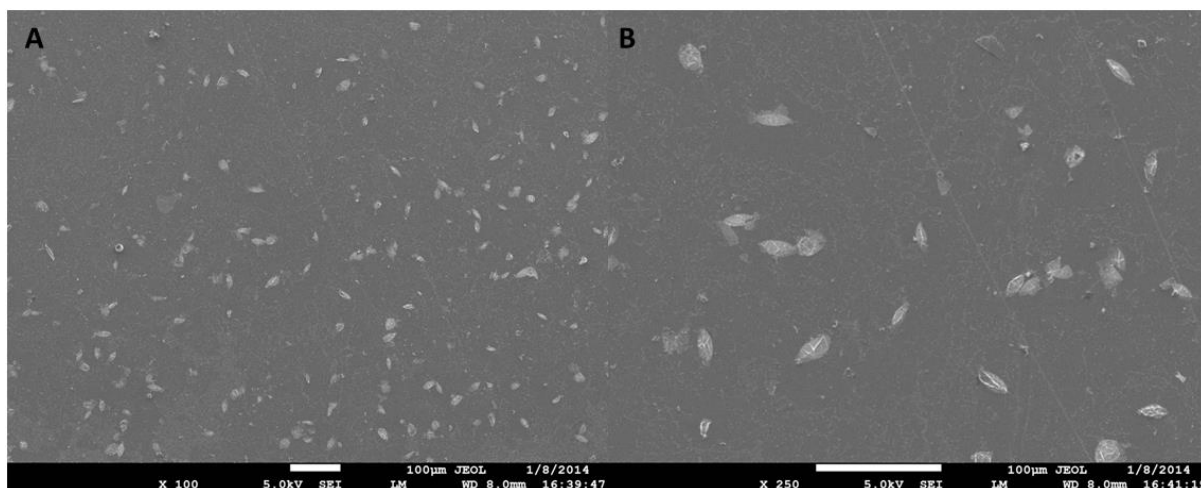
## Geometric Asymmetry Driven Janus Micromotors

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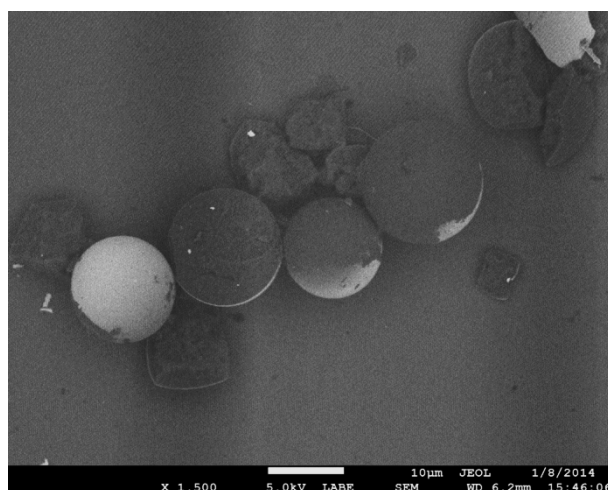
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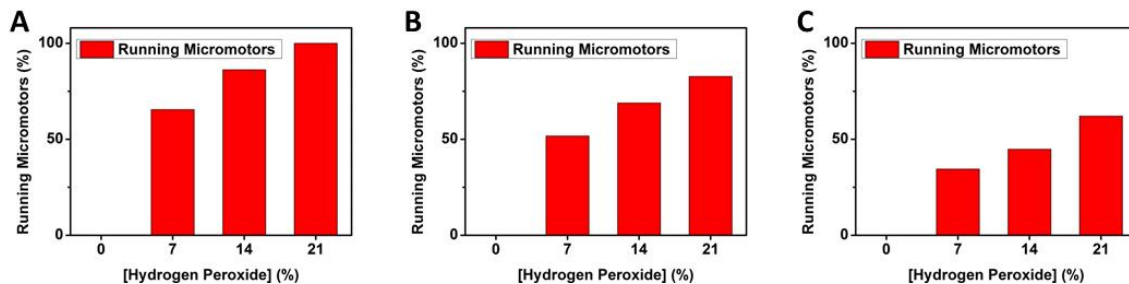
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**Figure SI-1.** Characterizations of the structures with scanning electron micrographs at magnifications of (A) 100× and (B) 250×. The silica beads with a layer of Pt (40 nm) sputtered on surface was etched with NaOH and dissolved, leaving only the Pt shell, which appeared to be flattened and folded under SEM. The scale bars indicate 100 µm.



**Figure SI-2.** SEM images of the structures of the silica beads with a layer of Pt (40 nm) sputtered on surface. Scale bar of 10 µm.



**Figure SI-3.** Number of running micromotors for (A) partially etched coconuts, (B) fully etched shells and (C) Janus motors without etching. The running suspensions were prepared by mixing hydrogen peroxide, SDS, micromotors and water. Each time after a fresh running solution was made, a drop of 10  $\mu\text{L}$  of such suspension was retrieved and applied on a glass slide freshly cleaned with  $\text{N}_2$  gas. The number of running micromotors were counted. The above procedure was repeated for 5 times for all three structures and for each concentration of  $\text{H}_2\text{O}_2$ . The total number of running micromotors for partially etched micromotors at 21% of  $\text{H}_2\text{O}_2$  was taken as 100%, and the rest of the data was normalized to this value.