Supporting Information for

Morphological Change of Molecular Assemblies through On-Surface Chemical Reaction

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**Figure S1.** Scanning transmission electron microscope (STEM) image of a sheet reacted for 96 h without coupling agents. Local EDX spectra measured in (b) unreacted area marked as 001 and (c) nanoclusters marked as 002 in (a). Fe signals are observed only on the nanoclusters, suggesting that the nanoclusters formed from aminoferrrocene molecules.

**Figure S2.** XPS spectra of (a) C1s and (b) Fe2p core level of pristine GO sheets (grey line), sheets reacted for 3 h, 24 h, 72 h with coupling agents (red line), and aminoferrrocene powder (orange line).
Figure S3. FT-IR spectra of pristine GO sheets (block line), GO sheets reacted for 53 h (light blue line), 96 h (purple line) without coupling agents, GO sheets reacted for 24 h (orange line), 72 h (red line) with coupling agents, and aminoferrocene powder (grey line). The spectra of pristine GO sheets illustrate the presence of ether or epoxide (1000 - 1280 cm$^{-1}$), C=C (1620 cm$^{-1}$), carboxyl (1720 cm$^{-1}$), carbonyl (1805 cm$^{-1}$), hydroxyl (broad peaks at 3050 - 3800 cm$^{-1}$) groups. The peaks in the spectra of aminoferrocene show vibrations of C-H at 1106 cm$^{-1}$, C-N at 1290 cm$^{-1}$, C=C at 1440 cm$^{-1}$. Corresponding peaks or features are observed weakly for the sheet reacted with and without coupling agents.
Figure S4. Mass spectroscopy of (a) aminoferrocene powder, GO sheets reacted for 72 h (b) with coupling agents and (c) without coupling agents. The peak at 201 amu in these spectra indicates that there are aminoferrocene molecules. The peaks in the smaller mass regions correspond to fragments of aminoferrocene molecules and GO sheets broken by accelerated ions bombardment.