

# Understanding the Induced Self-Assembly System Between PEO-*b*-PAA and Iron

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**Abstract**—The induced self-assembly phenomenon between PEO-*b*-PAA and Fe(II) was investigated. It was revealed that the electrostatic interaction between Fe(II) in the form of green rust (GR<sup>2+</sup>) particles and the COO<sup>-</sup> groups from the PAA backbone at pH 7 causes the formation of stable aggregates with  $D_h \sim 156$  nm. While it is stable at pH 7, the induced self-assembly structure, however, is disordered during the transformation of GR<sup>2+</sup> into Fe<sub>3</sub>O<sub>4</sub>. The pH increment and the oxidation process itself were found to affect the stability.