Effect of oxygen deficiencies on charge ordering in RFe$_2$O$_{4-\delta}$ (R=Lu and Y) Y. HORIBE, Rutgers University, S. MORI, S. SHINOHARA, Y. MATSUO, Osaka Prefecture University, N. IKEDA, Okayama University, S-W. CHEONG, Rutgers University — Charge ordering (CO) of Fe$^{2+}$ and Fe$^{3+}$ on the triangular lattice in RFe$_2$O$_{4-\delta}$ (R=Lu and Y) is suggested to play an important role in the physical properties such as ferroelectricity. Herein, we report changes in the CO structures due to the oxygen deficiencies in RFe$_2$O$_{4-\delta}$ by transmission electron microscopy. At room temperature, characteristic superlattice reflections at (1/3 1/3 1/2)-type positions can be observed in the nearly stoichiometric YFe$_2$O$_{4-\delta}$, while the diffuse streaks along c*-axis can be seen clearly in the non-stoichiometric YFe$_2$O$_{4-\delta}$. It is suggested that the correlations between the Fe-O bilayers are suppressed due to the oxygen vacancies and therefore the two-dimensional charge ordering appears in the non stoichiometric samples at room temperature.