The catalytic graphitization by metals of Fe, Co, Ni, and so on, has been utilized as a way to fabricate the graphitic structure from precursor polymers at relatively low temperature range of 800-1000ºC. The graphitization behavior of the precursor polymers depends on the size of metal particles; turbostratic graphite structure is obtained in the case that the size of metal particle is below 20 nm. Such turbostratic graphite structure is necessary to fabricate carbon materials with catalytic performance, for example, nitrogen (N)-doped carbon catalysts. The N-doped carbon catalysts have been mainly fabricated by pyrolysis of the blends of precursor polymers and/or metal compounds, however, there are few reports on fabrication of the N-doped carbon catalysts with controlling the size of metal particle. On the other hand, ion implantation technique, which possesses selectivity of various ion species, controllability of ion energy and fluence (number of ions), can potentially control the size of metal particle in the range of below 20 nm. That is, the ion implantation technique would be useful to fabricate the turbostratic graphite structure in high efficiency. In this work, a phenolic resin was irradiated by 100 keV iron (Fe) ions under vacuum at room temperature and carbonized at 800ºC under nitrogen atmosphere. As a result, it was found that the effect of catalytic graphitization became remarkable above the fluence of 1×10^{15} ions/cm^2 and that turbostratic graphite structure was formed around the Fe nanoparticles with average diameter of 22±7 nm.