

## The Effect of Shape Control of $\alpha''$ -Fe<sub>16</sub>N<sub>2</sub> Particles on Their Magnetic Properties

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$\alpha''$ -Fe<sub>16</sub>N<sub>2</sub> has been suggested as a one of the most promising candidate as a future rare-earth free permanent magnet due to abundant amount of Fe and N on the earth, its large magnetocrystalline anisotropy, and large saturation magnetization. Thus, researchers have developed the various synthesis methods such as wet chemical, ball milling and plasma process etc. However, there is no report on the shape control of  $\alpha''$ -Fe<sub>16</sub>N<sub>2</sub> particles and its effect on the magnetic properties. In this study, we have fabricated  $\alpha''$ -Fe<sub>16</sub>N<sub>2</sub> particles with various structures and compared their magnetic properties after ammonia nitriding process. This work was supported by the Industrial Strategic Technology Development Program (10062130, Theory-driven R&D for non-centrosymmetric structured rare-earth free Fe-based permanent magnet materials) funded by the Ministry of Trade, industry & Energy (MI, Korea).