

# Structure control of Fe Particles for the Efficient Nitridation

김수경<sup>1\*</sup>, 이정구<sup>1</sup>, 권세훈<sup>2</sup>, 백연경<sup>1</sup>

<sup>1</sup>재료연구소 분말세라믹본부

<sup>2</sup>부산대학교 재료공학과

The iron nitride phase  $\alpha$ -Fe<sub>16</sub>N<sub>2</sub> has been suggested as a possible rare-earth free permanent magnet candidate 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 structure control of Fe particles for the efficient nitridation to obtain high-purity  $\alpha$ -Fe<sub>16</sub>N<sub>2</sub> phase. In this study, we have fabricated two different structures of Fe particles and compared them to conventional Fe powders 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).