## Magnetic Structure of BaFe<sub>12</sub>O<sub>19</sub> Determined by Resonant X-ray Magnetic Scattering

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Resonant X-ray magnetic scattering (RXMS) has attracted much interest as a useful tool to determine the magnetic structures associated with specific electronic states such as 3d-4p interactions. The resonant enhancement in the Bragg intensity between charge and magnetic scatterings [1] makes it possible for a tiny single-crystal to give a complete determination of the crystal structure and spin arrangement. M-type BaFe<sub>12</sub>O<sub>19</sub> has been examined in this study, because there are five independent Fe sites in a hexagonal-ferrite structure, which are tetrahedral  $4f_1$ , bipyramidal 2*b*, and octahedral 2*a*,  $4f_2$  and 12*k* sites.

RXMS experiments were performed at the Fe K absorption edge at BL-3A, Photon Factory. Diffraction profiles for more than 30 reflections of a single crystal of 0.07 mm in diameter were measured with right- and left-circularly polarized X-rays, which were produced passing through a diamond (001) phase retarder. The magnetic anomalous scattering factors were estimated in the structurerefinement procedure. The observed asymmetry ratios were in agreement with those made for the most appropriate spin-orientation.

[1] Namikawa K., Ando M., Nakajima, T., Kawata H., J. Phys. Soc. Jpn., 1985, 54, 4099.

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