

# Zero-field NMR of $^{59}\text{Co}$ and $^{55}\text{Mn}$ in a Heusler Alloy $\text{Co}_2\text{MnGa}$

**H. Nishihara**<sup>a</sup>, T. Baba<sup>a</sup>, T. Kanomata<sup>b</sup>, K. Kobayashi<sup>c</sup>, R.Y. Umetsu<sup>d</sup>, and R. Kainuma<sup>c</sup>

<sup>a</sup>*Faculty of Science and Technology, Ryukoku University, Otsu 520-2194, Japan*

<sup>b</sup>*Faculty of Engineering, Tohoku Gakuin University, Tagajo 985-8537, Japan*

<sup>c</sup>*Graduate School of Engineering, Tohoku University, Sendai 980-8579, Japan*

<sup>d</sup>*Institute for Materials Research, Tohoku University, Sendai 980-8579, Japan*

Zero-field NMR spectra of  $^{59}\text{Co}$  and  $^{55}\text{Mn}$  are reported for a bulk sample of Heusler alloy  $\text{Co}_2\text{MnGa}$  which is a potential candidate for half-metallic ferromagnet. An asymmetric spectrum of  $^{59}\text{Co}$  in  $\text{Co}_2\text{MnGa}$  has been interpreted as a sum of main peak due to Co sites with nearest-neighbors which consist of 4 Mn and 4 Ga in the  $\text{L2}_1$  structure (67%), satellite signal due to Co sites with nearest-neighbors which consist of 3 Mn and 5 Ga (24%), one with nearest-neighbors which consist of 2 Mn and 6 Ga (8.6%), and one with nearest-neighbors which consist of 5 Mn and 3 Ga (1.4%). A spectrum of  $^{55}\text{Mn}$  in  $\text{Co}_2\text{MnGa}$  has been interpreted as a sum of main peak due to Mn sites with 8 nearest-neighbor Co sites in the  $\text{L2}_1$  structure (81%), satellite signal due to Mn sites with nearest-neighbors which consist of 7 Co and 1 Mn (7.2%), one with nearest-neighbors which consist of 6 Co and 2 Mn (4.9%), one with nearest-neighbors which consist of 7 Co and 1 Ga (3.9%), and one with nearest-neighbors which consist of 5 Co and 3 Mn (3.2%). Atomic disorder in bulk material of  $\text{Co}_2\text{MnGa}$  is suggested to be less than that in  $\text{Co}_2\text{FeAl}$ , but larger than that in  $\text{Co}_2\text{FeSi}$  reported in literatures<sup>1,2</sup>.

<sup>1</sup>K. Inomata, M. Wojcik, E. Jedryka, N. Ikeda, and N. Tezuka, *Phys. Rev. B* **77** (2008) 214425.

<sup>2</sup>S. Wurmehl, J. Kohlhepp, H. J. M. Swagten and B. Koopmans, *J. Phys. D* **41** (2008) 115007.