

**Performance of Room-temperature Magnetic Refrigerator
Applying Ring Halbach-array Magnetic Circuit**

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Coefficient of performance of railway vehicle's air-conditioners is lower than that of household air-conditioners due to boarding constraints. To save energy of railway vehicle's operation, magnetic refrigeration is being investigated instead of vapor-compression refrigeration for room-temperature control. Magnetic refrigeration is based on magnetocaloric effect that thermal absorption by magnetic material is caused when magnetic field surrounding it is removed. Since strong magnetic field enhances magnetocaloric effect and periodic variation of the magnetic field repeatedly causes the effect, a test machine of magnetic refrigeration was fabricated by applying ring Halbach-array magnet circuit and its rotation in this study.