

A system of permanent magnets is used in the devices for generating strong permanent magnetic field in large volume – for example, in refrigeration equipment based on the magnetocaloric effect, magnetic spectrometers etc. A system of magnets for generating strong magnetic fields within large space at small volume of magnetic material comprises at least two magnets, which are located far away one from another, at least one region of space, which is formed between said magnets, at least one case which encloses said magnets. At that magnetization vectors of said magnets have radial and axial components, the radial vectors of said magnets forming said region are opposite directed, the material of said magnets has a field of single-axial anisotropy not less than 10^5 A/cm and coercive field strength not less than said material saturation induction. The axial magnetization component is set in such a way that an angle formed by the magnetization vector and a plane perpendicular to the axis of said magnets is located within $\alpha = 0,1 \div 60^\circ$ range; the projections of magnetization vectors to said axis are parallel. In the other embodiment a system of magnets for generating strong constant magnetic fields within large space with low volume of magnetic material comprises at least two magnetic sub-systems located far away one from another, at least one region of space, which is formed between said subsystems, at least one case which encloses said magnets. The magnetic subsystem comprises a majority of single magnets in the form of sectors adjoining to each other. The material of said magnets has a field of single-axial anisotropy not less than 10^5 A/cm and coercive field strength not less than saturation induction of said material. The components of magnetization vectors in each magnet at least in one subsystem are parallel to the bisecting lines of sectors and directed towards the centers of the common axis of said subsystems; the components of magnetization vectors of each magnet at least in the other subsystem are parallel to the bisecting lines and opposite directed from the centers on the common axis; said region is formed by said magnetic subsystems which has opposite direction of magnetization towards the centers on said axis. The magnetization vector in said subsystem has the magnetization component along said axis, preset in such a manner that an angle formed between the magnetization vector and a plane which is perpendicular to said axis are located within range of $\alpha = 0,1 \div 60^\circ$; the projections of said magnetization vectors are parallel. Majority of the inventive features provides decrease of low-size characteristic of devices that use the strong permanent magnetic field, increase by 10 % of average value of the rated magnetic field.