

Project title | **Toy Technology Robotics (Small size, Low energy, Low cost)**

Institutions : TOMY Company,Ltd.

Research outline

Objective

The objective is to develop a low-cost insectoid robot capable of activity both on Earth and on the Moon or Mars.

We are aiming to bring both the insectoid robot itself and the underlying technologies to market, starting with technologies that have already been developed with features such as ease of communication, conservation of power, extended operating life, and miniaturization.

Results

We applied these mechanisms and expertise used in toys to develop a mobile robot with a diameter of 100 mm and weight of 300 g. The robot is small, roughly the same size as a softball. The initial shape is a perfect sphere. When a command is sent from an external controller via Wi-Fi, the robot transforms from spherical mode to extended travel mode, capable of moving forward and turning right. Because it is a spherical shape, it moves/rolls faster down an inclined surface, consuming less power.

In addition, while in travel mode, it moves stably by releasing wheels on either side of the sphere and a rear support wheel. At present, it has succeeded in ascending a 10° slope in a test environment simulating a lunar surface.

