

Background

Generally, industrial robots have to **exchange** grippers in accordance with the shape and posture of the objects.

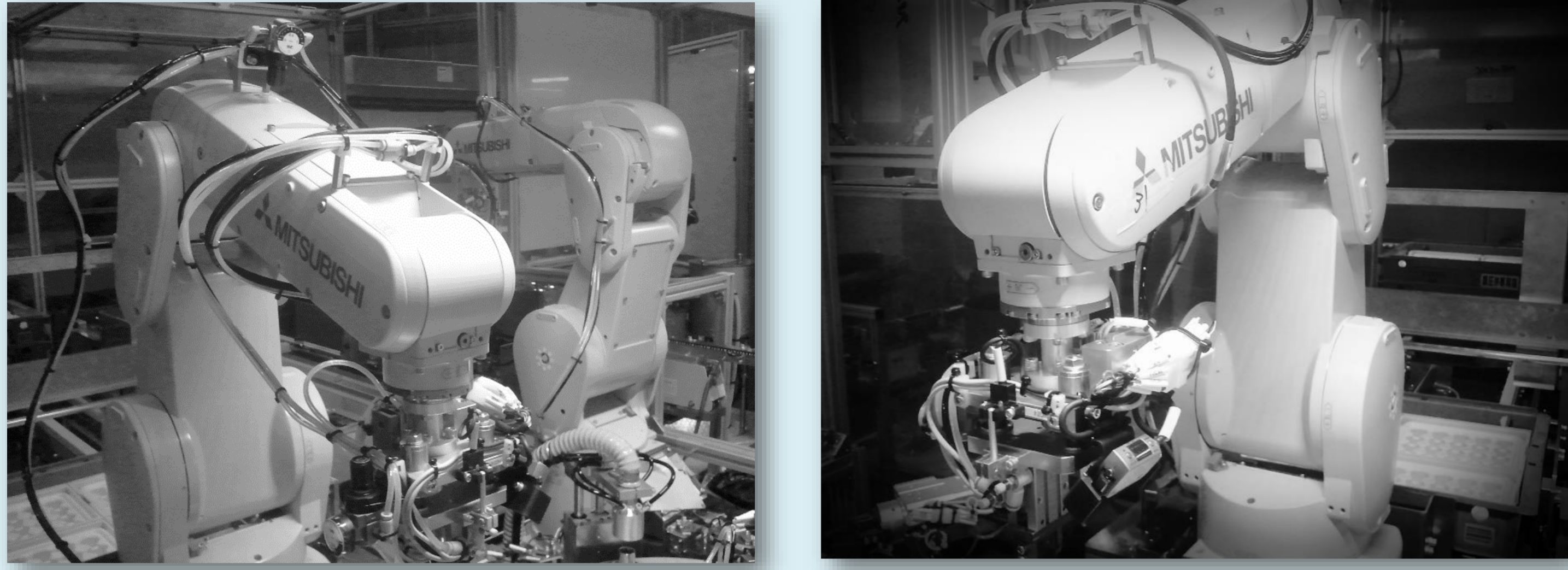


Fig. 1 Industrial robots' automatic exchanger.

- ❑ Selection of the appropriate gripper.
- ❑ Change of grip planning by the selection..

Related work

Recently, several **universal grippers** that can handle more shapes than normal gripper have been developed.

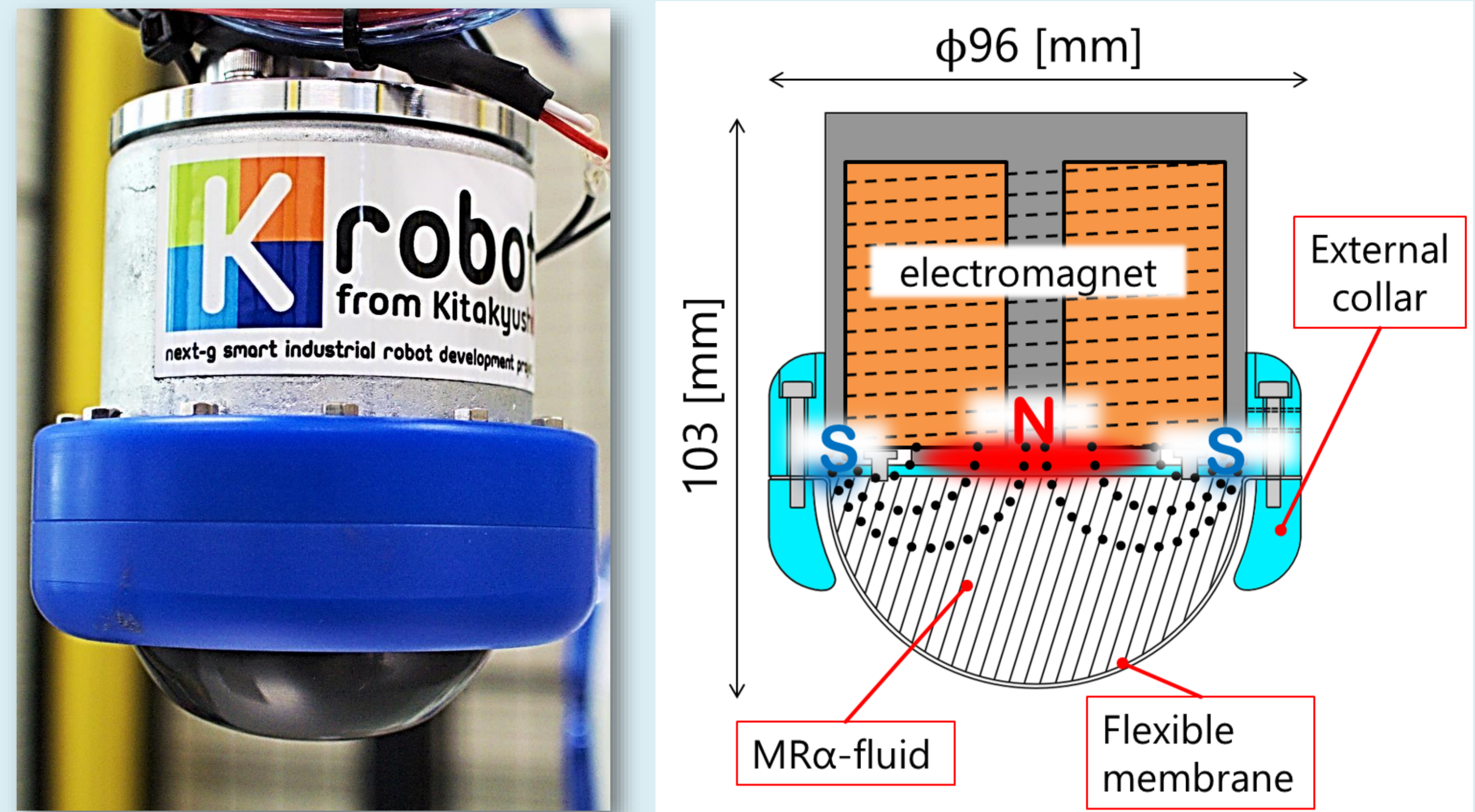


Fig. 2 Structure and overview of MRα-fluid gripper.

Parallel gripper

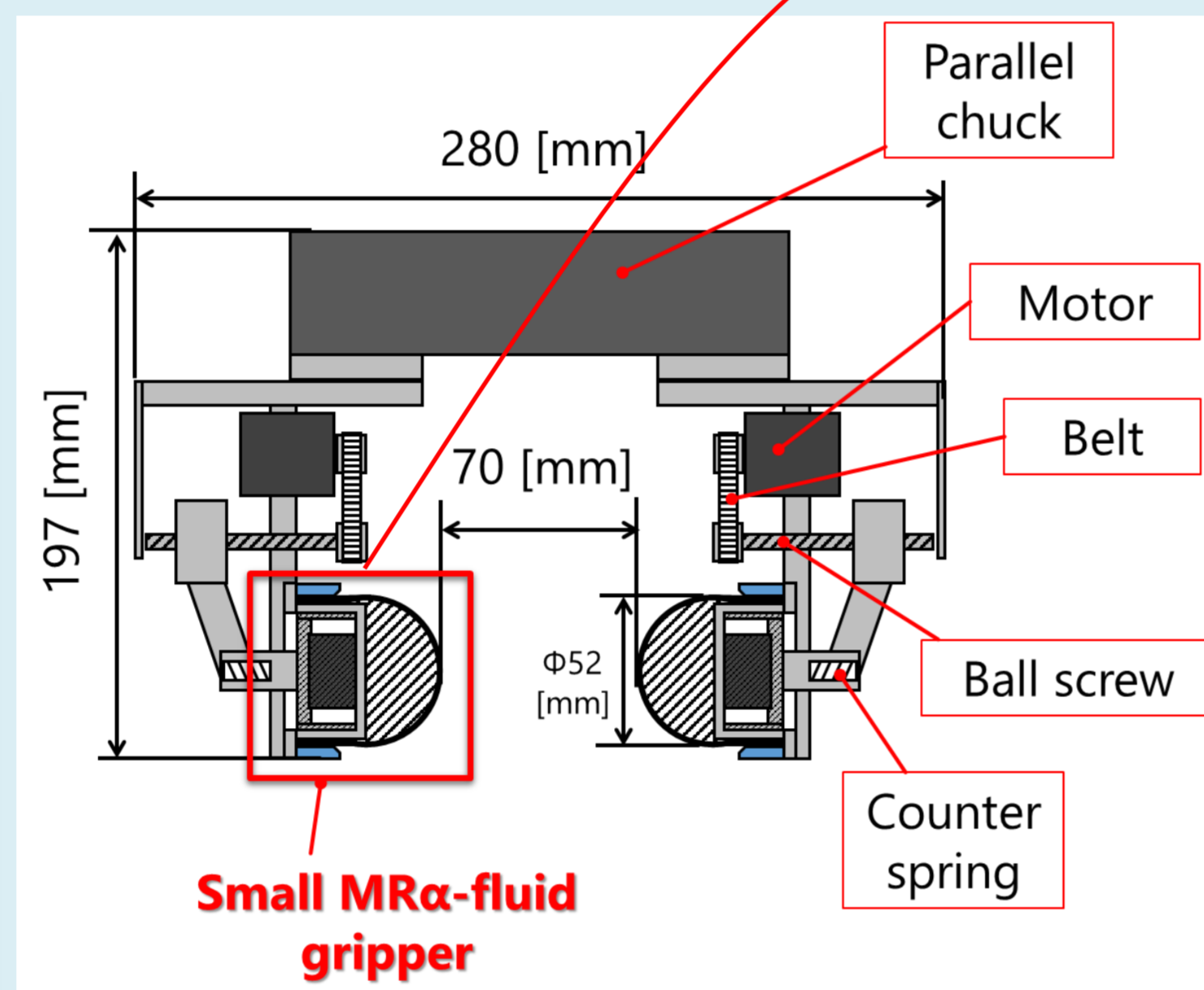
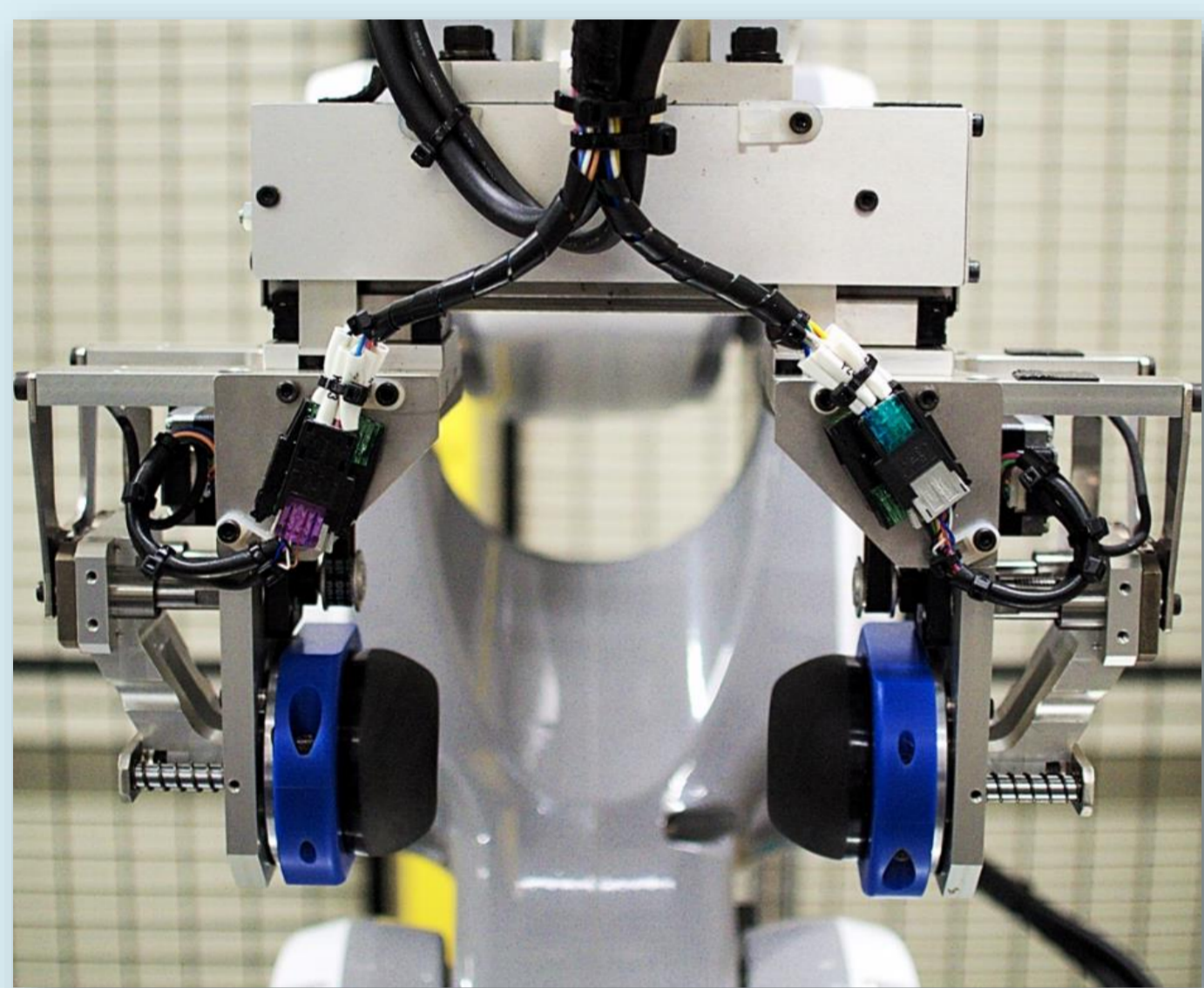


Fig. 3 Developed parallel gripper.

This gripper has two fingertips constructed with flexible membrane enclosing MRα-fluid. We developed a mechanism which move a permanent magnet in order to control viscosity of MRα-fluid, and a novel flexible membrane.

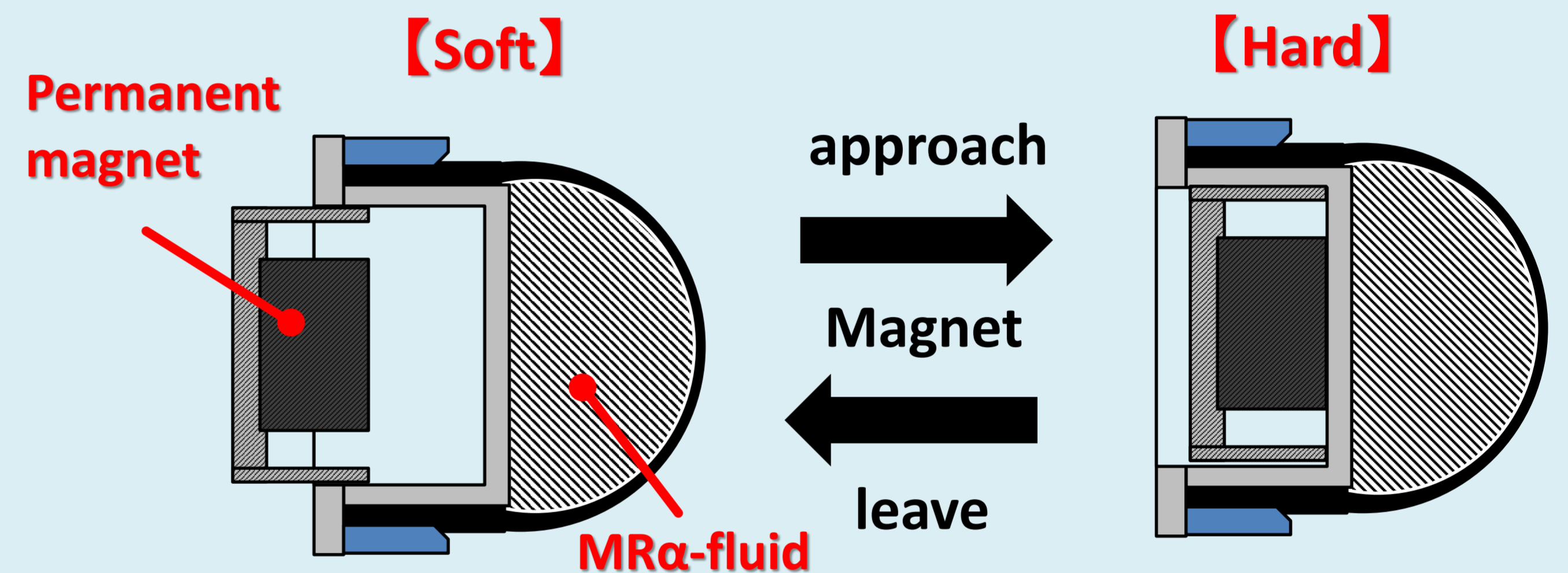


Fig. 4 Changing stiffness of fingertips by moving permanent magnet.

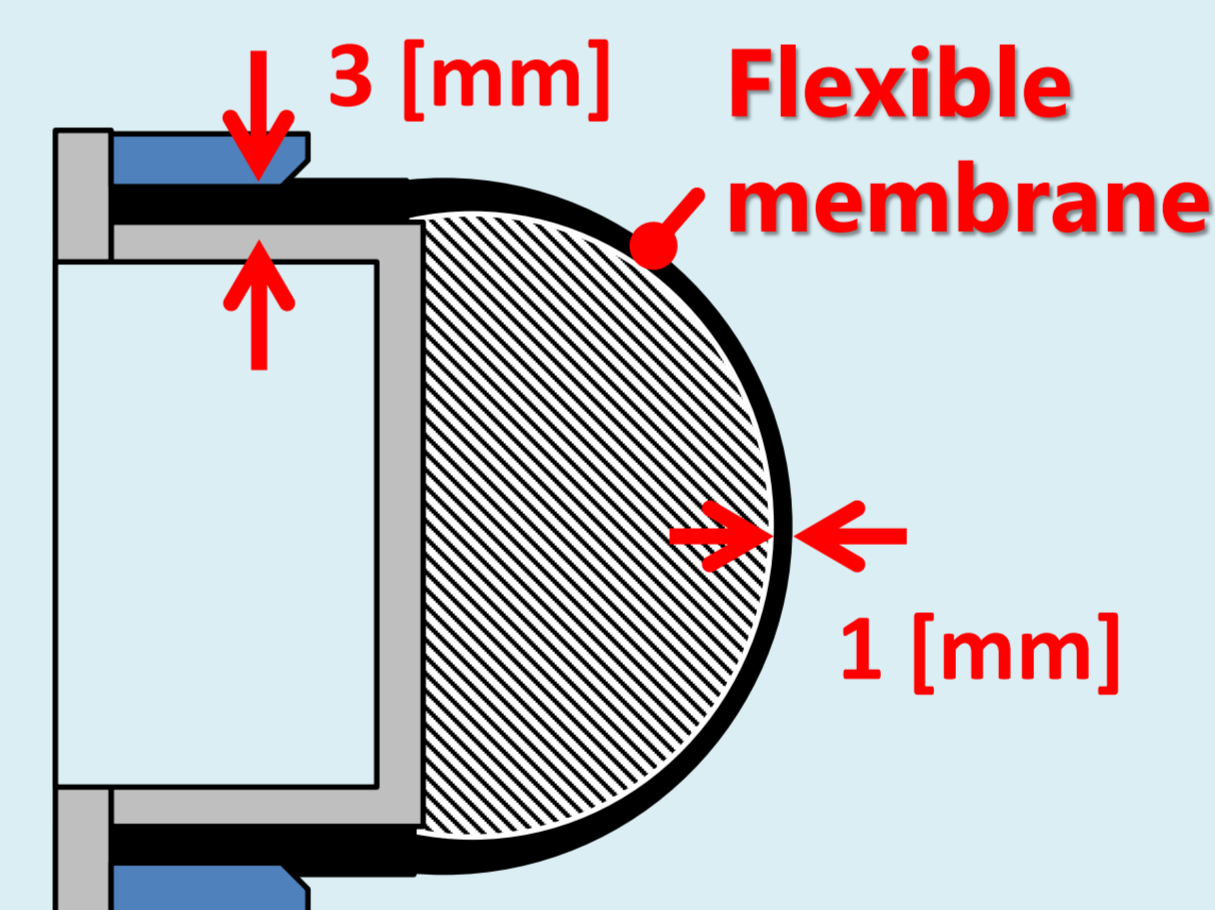


Fig. 5 Detail of flexible membrane.

- ❑ Mat finish
 - ❑ Made from HNBR
- ➔ **High durability**
High functionality

Experiment

Developed gripper can grip fragile, soft and various shaped objects. Moreover, developed gripper can firmly grip objects, and transport an object in high speed.

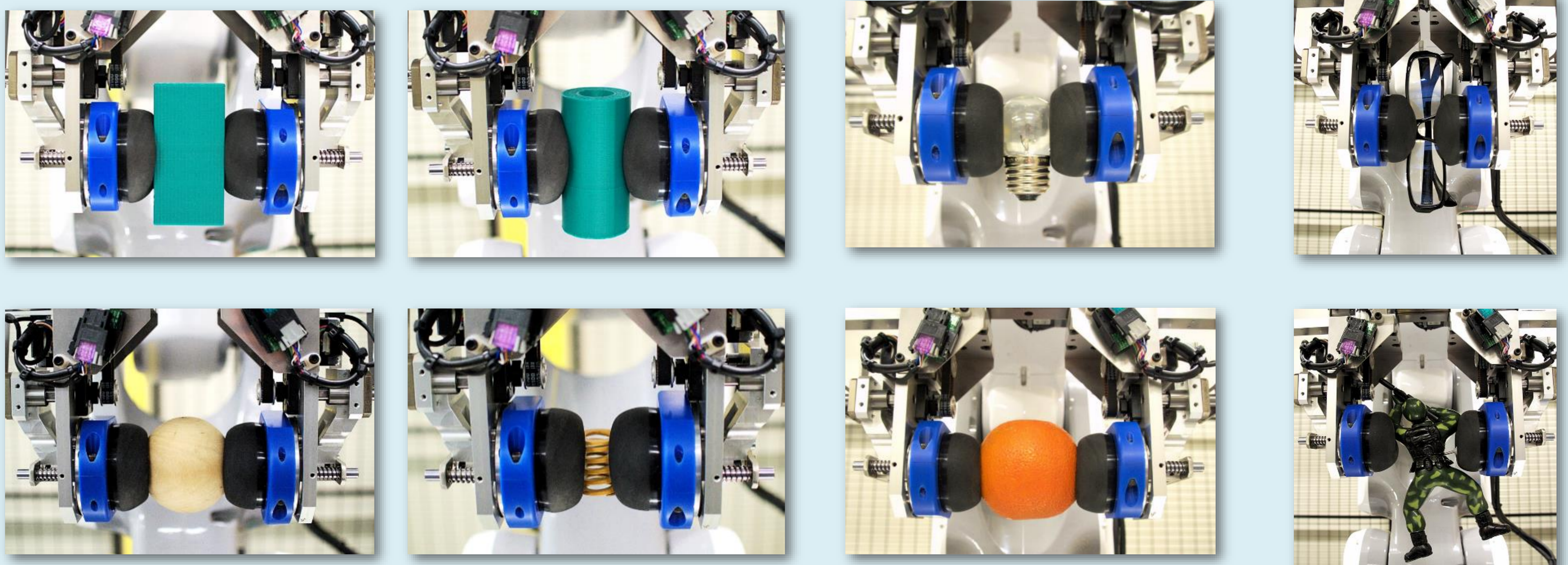


Fig. 6 Gripping the various shape of the object by developed parallel gripper.