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Nota di contenuto	Introduction -- Softness: Another Dimension to Define Nature -- Conventional Soft Machine and Allied Materials -- Basic Properties of Liquid Metal Materials and Soft Matter -- Mechanically Enabled Transformation of Liquid Metal -- Electrically Induced Transformations of Liquid Metal -- SCHEME based Reversible Transformation of Liquid Metal -- Electromagnetic Induced Transformation of Liquid Metal -- Self Fueled Shape Changeable Liquid Metal Machines -- Self Powered Liquid Metal Droplet Motors -- Liquid Metal Based Transient State Machine -- Directional Control of Self Fueled Liquid Metal Machine --

Breathing Enabled Liquid Metal Machine -- Nanoparticles Enabled Liquid Metal Machine -- Substrate Enabled Liquid Metal Machine -- Hybrid Machine Composed of Liquid Metal and Rigid Structure -- Liquid Metal Wheeled 3D Printed Vehicle.

Sommario/riassunto

This book discusses the core principles and practical applications of a brand new machine category: liquid-metal soft machines and motors. After a brief introduction on the conventional soft robot and its allied materials, it presents the new conceptual liquid-metal machine, which revolutionizes existing rigid robots, both large and small. It outlines the typical features of the soft liquid-metal materials and describes the various transformation capabilities, mergence of separate metal droplets, self-rotation and planar locomotion of liquid-metal objects under external or internal mechanism. Further, it introduces a series of unusual phenomena discovered while developing the shape changeable smart soft machine and interprets the related mechanisms regarding the effects of the shape, size, voltage, orientation and geometries of the external fields to control the liquid-metal transformers. Moreover, the book illustrates typical strategies to construct a group of different advanced functional liquid-metal soft machines, since such machines or robots are hard to fabricate using rigid-metal or conventional materials. With highly significant fundamental and practical findings, this book is intended for researchers interested in establishing a general method for making future smart soft machine and accompanying robots.