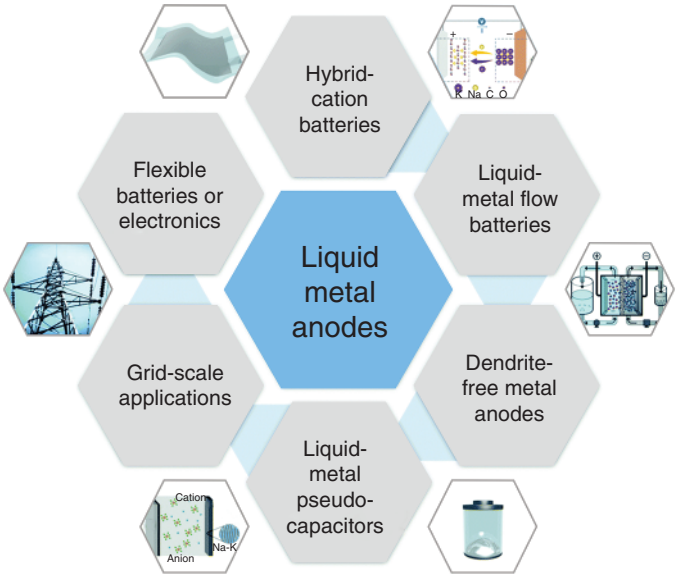

Figure 1.5 Prospective designs and applications of the liquid-metal-based electrodes in various energy storage strategies [23]. Source: Guo et al. [23]. Reproduced with permission of Royal Society of Chemistry.

as ASUS, HP, and MACHENIKE. There is no doubt that the price will increase, but it can give you a very enjoyable experience. Making good use of liquid metals as a radiator of laptops would bring rapid advances in technology.

In recent years, people focus on exploring, developing, and utilizing the universe, so new space materials with a strong performance is essential to overcome the evil environment, such as zero gravity, vacuum, larger temperature, and strong radiation. Up till now, space materials mainly include carbon-based materials, porous metals, polyimide, and fiber. Compared to the above materials, liquid metals possess a lot of distinguished properties, such as high electric conductivity, high thermal conductivity, fluidity, and low volatility, which make them a good choice for utilization in space science and technology. It has also been introduced that liquid metal has very good heat dissipation capacity. For space exploration, a liquid metal cooling system has been proved to be the most effective space nuclear electric heating management method [26]. In addition, liquid metal can be used as a thermal interface material for heat conduction. Solar energy is the only energy source in spacecraft operation, so how to store solar energy is very important. Usually, solar energy is converted into heat energy, and then heat energy is converted into electrical energy for storage. Compared with the common thermal storage materials (fluorine), liquid metal has high thermal conductivity, high latent heat of phase change, and low thermal expansion rate, which can be used as a new type for energy storage material. Three-dimensional printing technology of liquid metals provides a very simple method for rapid manufacturing and maintaining electronic circuits. More importantly, there is a large amount of electromagnetic radiation in the universe, which is

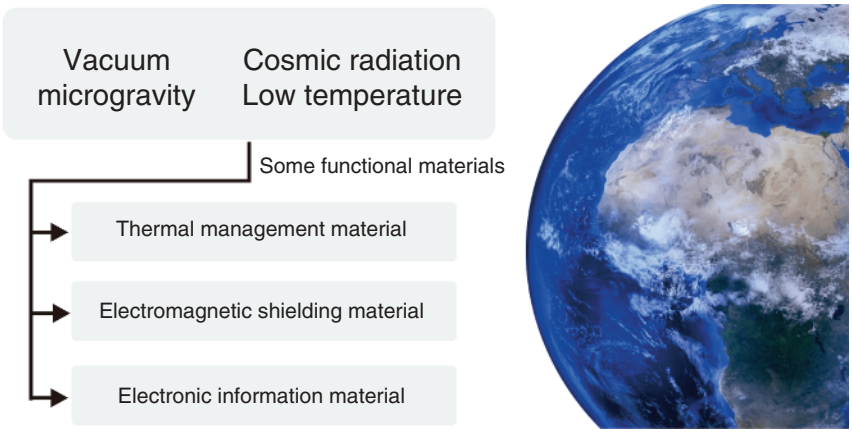

Figure 1.6 Candidate materials needed to satisfy the space physical environment [27]. Source: Zhang and Liu [27]. Reproduced with permission of Springer Nature.

not conducive to the operation of devices. The flexible liquid metal electromagnetic shielding material has good wettability and plasticity, which can meet the requirements of complex shape and effectively protect the equipment from radiation. Moreover, the liquid metals usage in science and technology is still in its infancy and we need to keep exploring and look forward to your joining (Figure 1.6).

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