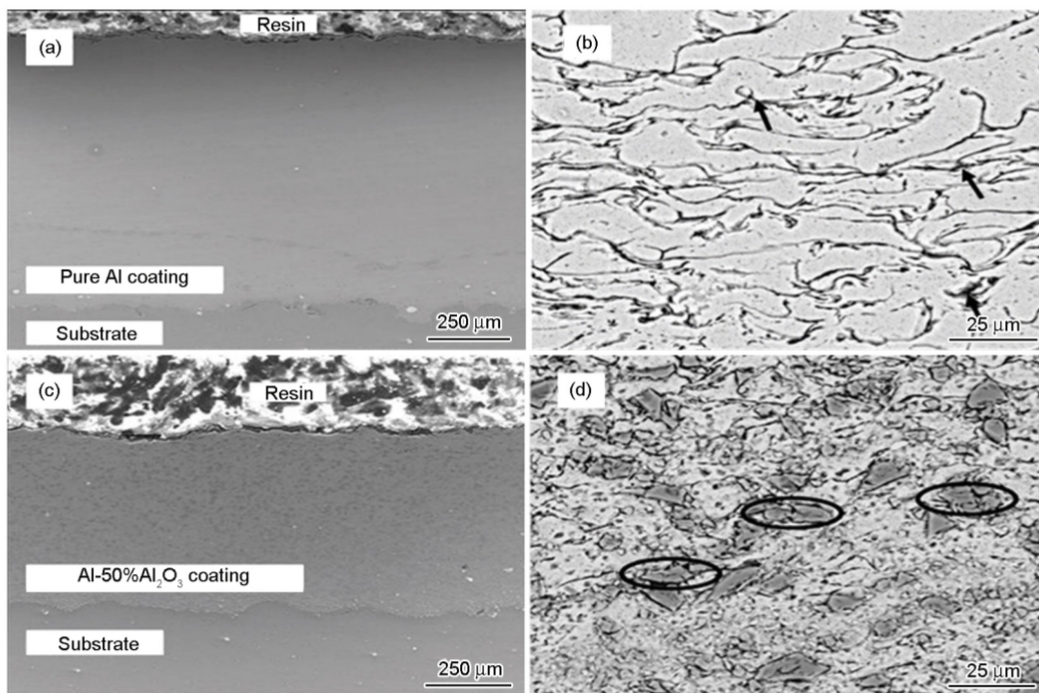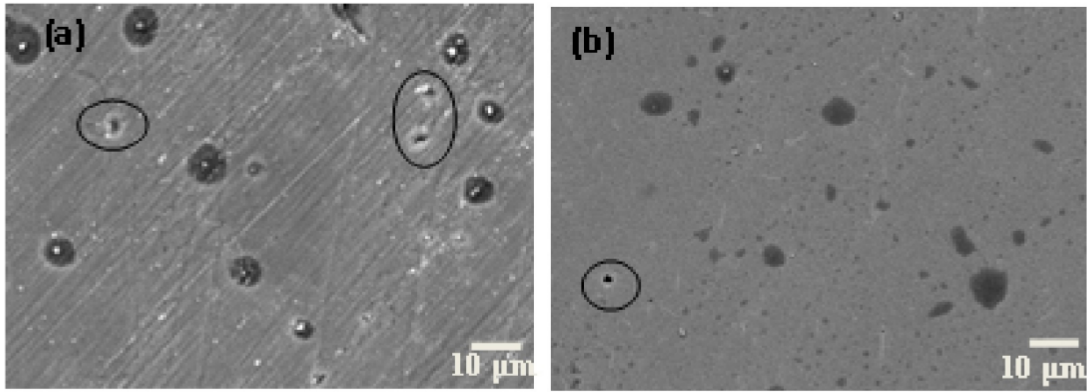Name:

HYENA motorcycle for extreme environment

Introduction:

HYENA is a special motorcycle applying to extreme environments, such as disaster rescue, material searching, ecological protection and field research. The main frame of the motorcycle is made of magnesium alloy, carbon fiber sheet and a small amount of ABS plastic. The combination of large amount of magnesium alloy and carbon fiber sheet makes the HYENA feature for the lightness, flexibility, anti-corrosion and anti-impact. Meanwhile, based on the concept of IOT, the designer created HYENA SNS (social networking services) for HYENA. It can sound three kinds of warning tone, representing "in danger", "appreciation" and "alert" respectively. These warning tones can conduct efficient yet simple communication and information transfer during the operation for the operators. Compared with the verbal communication or text prompt on digital screen, such method can make the communication faster and clearer in the high-risk situation. Meantime, such communication can be conducted passively. With the development of 5G technology, if HYENA can still be connected to the internet in the extreme environment, a more scientific prompt can be provided. For instance, when it is closer to the destination, "alert" can pop out, intermittent "in danger" warning can be sent out while the motorcycle overturns abnormally, the other person can be contacted and upload the last position to the head office.

Overview:

HYENA is a special motorcycle applying to extreme environments, such as disaster rescue, material searching, ecological protection and field research. The motorcycle is mainly made of magnesium alloy and carbon fiber sheet. Based on the concept of IOT, the designer created HYENA SNS (social networking services) for HYENA , which can make more efficient information transfer during the operation for the operators. Compared with the verbal or text prompt on digital screen, such method can make the communication faster and clearer in the high-risk situation with three kinds of warning tone, representing "in danger", "appreciation" and "alert" respectively. Meantime, such communication can be conducted passively. With the development of 5G technology, HYENA SNS will be introduced to the function of IOT.
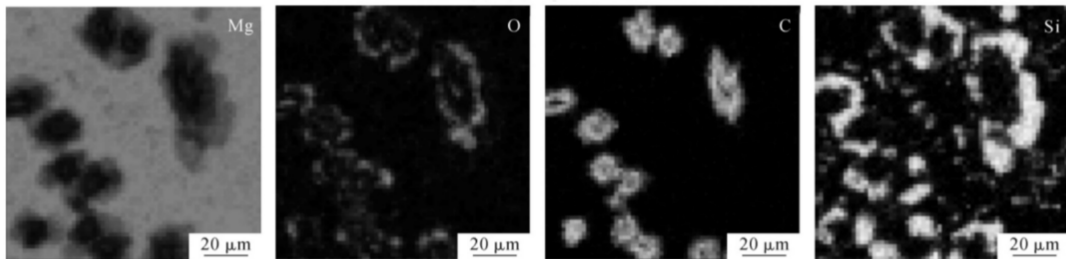
(e)~(h)SiO$_2$
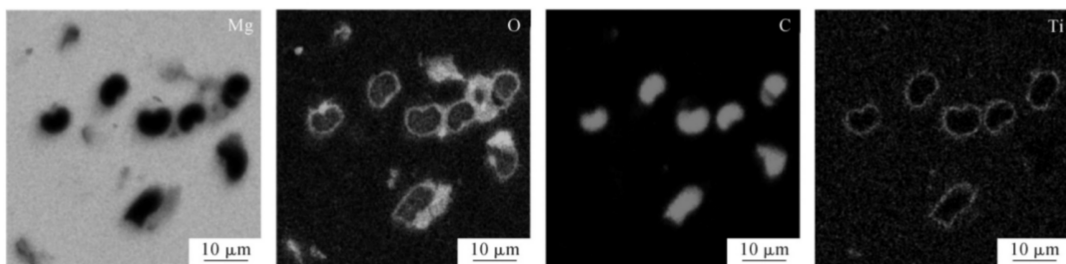
(i)~(k)TiO$_2$

EDS element line-scan and face-scan results of C/Mg composites with different carbon fiber coatings

Operation detail:

There is a knob switch on both handles of HYENA, which can be triggered by stirring with thumb.

Meanwhile, the switch can rebound to the original position. Push the switch of the left handle forward to sound the prompt tone of "appreciation" and push the switch of the right handle forward for "alert". By pushing both of them forward, it will sound the prompt tone of "in danger". Such design can make a sound of "in danger" for the emergent situation without thinking. Furthermore, the position for "appreciation" and "alert" can be switched. The project designer would like to ensure that the switch of cue tone for "alert" will be operated by the strong hand so that it can only be second to the "in danger" sound.

Structural detail:

The outer shell of HYENA adopts the magnesium alloy material of low casting defect rate and light weight in practical application, which is a forward-looking consideration. The magnesium alloy is known as the "green material" with rich development and application potential of the century, which is extremely environment friendly and can be pollution-free and full recovered. At present, the government put forward the requirements of reducing the weight of the transportation industry, in addition to that, the vehicles with light weight have become a development trend. In the event that unrecycled incidents happen in extreme environments, such as rain forest and desert, the degradation rate of magnesium alloy is far higher than that of other metal or alloy.

Background:
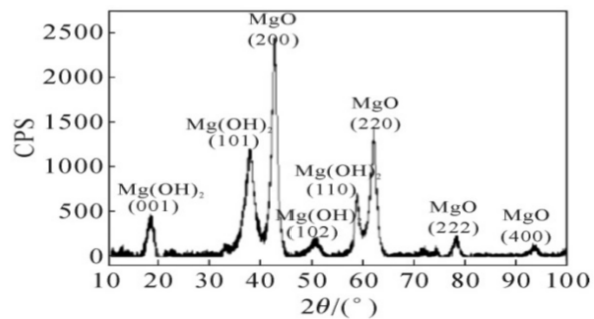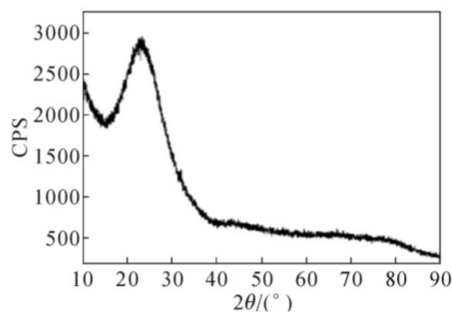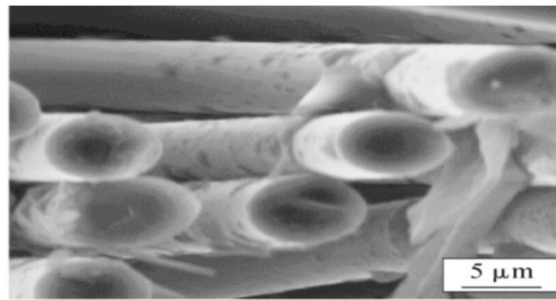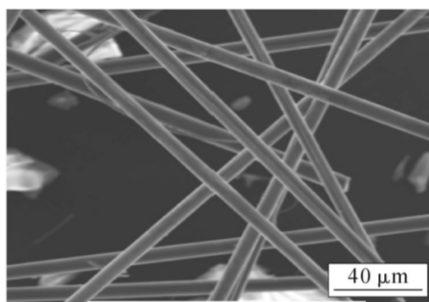
The detailed consideration of current design of the motorcycle for the extreme environment is insufficient, which makes it not suitable for the application accordingly, hence, a new concept shall be brought in.