

# **Additive Manufacturing**

## **Abstract**

In his 2013 State of the Union Address, US President Obama highlighted that Additive Manufacturing (AM) "has the potential to revolutionize the way we make almost everything." Thus his government is planning to create a network of 15 additive manufacturing (AM) hubs in US. In a special report by Economist in 2012, the magazine has hailed AM as one of the key enabling technologies for the looming third industrial revolution. With the rapid development of digital technologies such as smart software, novel materials, AM and web-based services, low cost and home based innovation activities are rapidly spreading worldwide.

Hong Kong is a highly developed knowledge economy. It is no longer possible for HK to compete with its neighboring regions in traditional manufacturing industries. However, AM technologies have created an entirely new opportunity for HK to further develop its knowledge economy by embarking on more innovative industries such as innovative product development. With AM technologies, product development cycle can be significantly shortened to days or weeks from many months or years in previous practice. Furthermore, product development is no longer dependent on workshops that occupy a large work space with oily, bulky and heavy machineries. Instead, modern AM technology based product development can be distributed in many locations, or even households, thus mitigating the problem of HK's high land premium.

AM is still in its infancy. Current capabilities of additive manufacturing are far behind the expectation of industries. Both local and overseas research activities on additive manufacturing have been focusing on new materials, new processes, new software capabilities, and new applications of the emerging AM technology. With billions of worldwide funding in AM research (HKU funded more than HK\$16 million in 2014), AM technology will see more wide spread applications in the near future.