Appendix

HKPC featured the application of 3D printing technology as a key highlight at the exhibition:

Exhibits produced using HP's "Metal Jet" 3D printing technology:

- A filter featuring a delicate thin-walled structure, demonstrates the practical value of high-precision printing; a set of gears and combs, with their compact structure and uniform tooth pitch, showcase the high strength and durability of metal parts in mechanical applications.
- A one-piece, movable fishbone pendant that requires no traditional assembly, achieving a fluid and dynamic aesthetic through 3D printing. Also on display was a coin showcasing exquisite detail and a delicate hollow structure, visually illustrating the technology's breakthroughs in complex microstructures.

Exhibits produced using HP's "Multi Jet Fusion (MJF)" 3D printing technology:

- These exhibits can form complex mechanical components such as buckles, exhaust pipes, and exhaust fans in a single piece without the need for support structures. This significantly enhances design and manufacturing flexibility. They are also suitable for producing delicate structures in fashion consumer goods, such as stretch bracelets.
- High-strength nylon PA12, with excellent durability, is widely used in high-load applications such as sports protective gear. Additionally, elastic TPU can be utilised to manufacture medical devices like breast prostheses and orthotic insoles, providing enhanced comfort and functionality.
- With the HKPC's professional post-processing process, including vapor smoothing process, the surface finish and overall quality of the products can be effectively enhanced, meeting both aesthetic and performance requirements.

HKPC also showcased a range of cutting-edge advanced materials, highlighting their potential to empower emerging industries such as the low-altitude economy and life sciences, as well as traditional sectors, breaking through performance bottlenecks.

- GrapheneGuard is the world's first graphene-enhanced nanofiber medical textile, integrating single-layer graphene oxide and nanofibers to revolutionise surgical gowns. Its protective performance surpasses EN-13795 standards, with the graphene oxide nanofiber matrix eliminating over 99.9% of pathogens (e.g., MRSA, H1N1, SARS-CoV-2), effectively reducing hospital cross-infections and enhancing pandemic resilience and sustainability. GrapheneGuard offers 20 times higher breathability than traditional medical textiles, significantly improving healthcare workers' comfort, alleviating heat stress during prolonged surgeries, and ensuring operational precision. Utilising scalable needleless electrospinning technology, production is cost-effective and eco-friendly, minimising solvent use and waste. Despite higher initial equipment costs, its exceptional performance and scalability set a new standard in the medical protective field, advancing global health and sustainability.

- HKPC has successfully developed a composite material made from porous aluminum foam and carbon fiber sheets, which serves as a key structural component to enhance drone endurance. This innovation not only maintains the overall rigidity of the drone and meets flight stability requirements, but also achieves a 30% weight reduction in the fuselage, significantly extending its endurance.