

China designs biomimetic nanosheet for cancer therapy and imaging

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Can track tumour development and treatment processes in real-time



A research team from the Department of Applied Biology and Chemical Technology (ABCT) of The Hong Kong Polytechnic University (PolyU) has developed a novel type of biomimetic nanosheet with a multi-modal imaging function, which can track tumour development and treatment processes in real-time.

By harnessing two emerging cancer therapies, namely immunotherapy and photothermal therapy, the biomimetic nanosheet enables effective and precise treatment of tumours, which will significantly improve the therapeutic outcome of tumours, reduce side effects and increase patients' survival rates. The research findings have been published in the prestigious international journal *Advanced Science*.

The PolyU-developed biomimetic nanosheets can also achieve the goals of theranostics. By harnessing magnetic, optical and thermal properties, the nanomaterials enable three imaging modalities, namely magnetic resonance imaging (MRI), photoacoustic imaging (PAI) and photothermal imaging (PTI), for real-time tracing and tracking of the tumour sites and the nanosheets, in order to achieve multimodal diagnosis in cancer treatment.

Dr Summy Lo Wai-sum from ABCT said, "In view of the fact that there is a lack of efficient and safe theranostics materials, PolyU's biomimetic nanomaterial has promising prospects in application. In future, our team will further expand the application of this nanomaterial to other cancer therapies and study the metabolism of the nanosheet in the living body, hoping that more cancer patients can benefit from new theranostic methods."