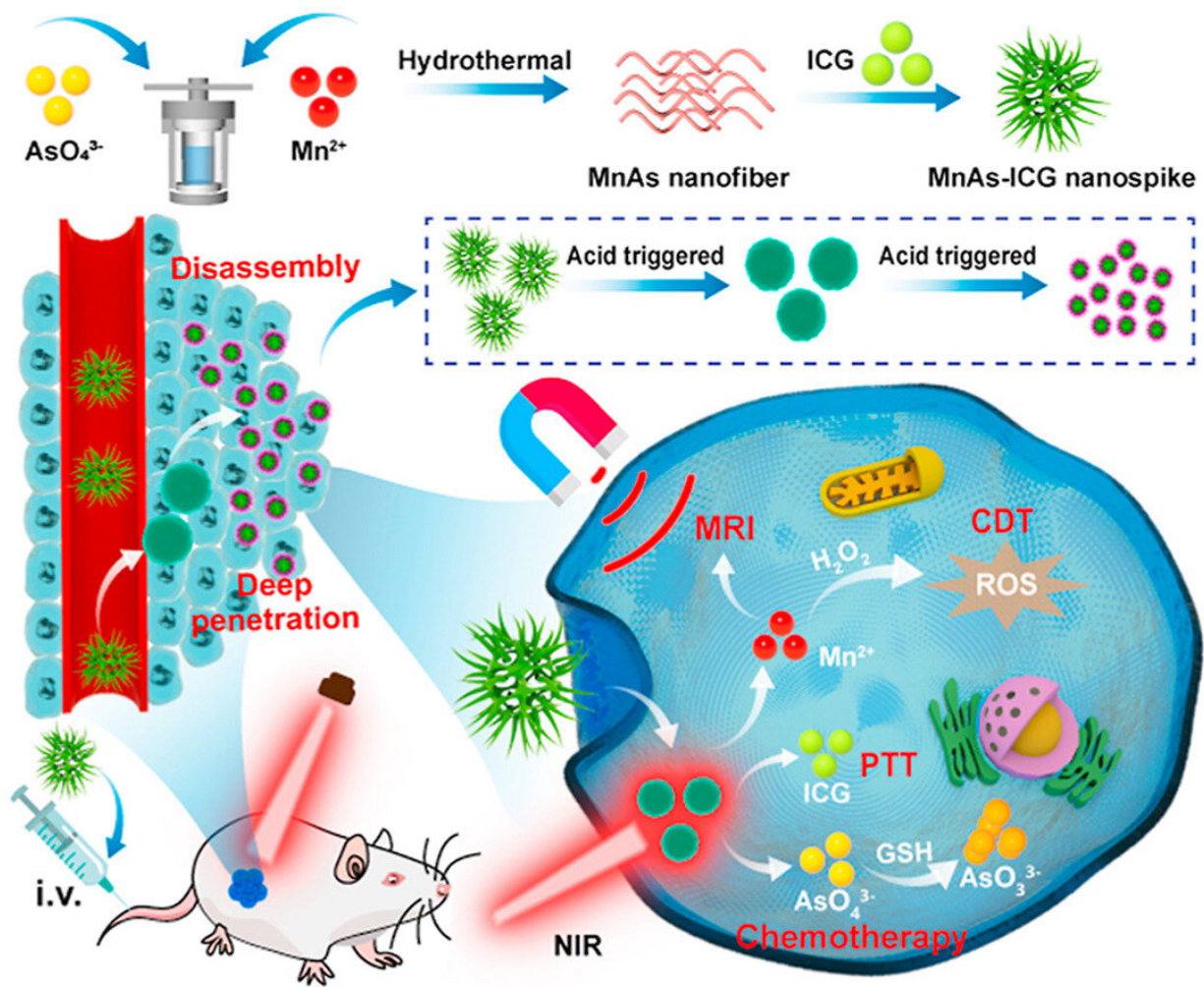


# Theranostic nano-platform for MRI-guided synergistic therapy against breast cancer

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Graphical abstract. Credit: *Acta Pharmaceutica Sinica B* (2022). DOI: 10.1016/j.apsb.2022.02.027

Carrier-free multi-component self-assembled nano-systems have attracted widespread attention owing to their easy preparation, high drug-loading efficiency, and excellent therapeutic efficacy. In an article recently published in *Acta Pharmaceutica Sinica B*, researchers generated a MnAs-ICG nanopike by self-assembly of indocyanine green (ICG), manganese ions ( $\text{Mn}^{2+}$ ), and arsenate ( $\text{AsO}_4^{3-}$ ) based on electrostatic and coordination interactions, effectively integrating the bimodal imaging ability of magnetic resonance imaging (MRI) and fluorescence (FL) imaging-guided synergistic therapy of photothermal/chemo/chemodynamic therapy within an "all-in-one" theranostic nano-platform.

The as-prepared MnAs-ICG nanopike had a uniform size, well-defined nanopike morphology, and impressive loading capacities. The MnAs-ICG nanopike exhibited sensitive responsiveness to the acidic tumor microenvironment with morphological transformation and dimensional variability, enabling deep penetration into tumor tissue and on-demand release of functional therapeutic components.

In vitro and in vivo results revealed that MnAs-ICG nanopike showed synergistic tumor-killing effect, prolonged [blood circulation](#) and increased tumor accumulation compared to their individual components, effectively resulting in synergistic therapy of photothermal/chemo/chemodynamic therapy with excellent anti-tumor effect.

Taken together, this new strategy might hold great promise for rationally engineering multifunctional theranostic nano-platforms for breast cancer treatment.

**More information:** Xiaojie Chen et al, Cooperative coordination-mediated multi-component self-assembly of "all-in-one" nanopike theranostic nano-platform for MRI-guided synergistic therapy against

breast cancer, *Acta Pharmaceutica Sinica B* (2022). [DOI: 10.1016/j.apsb.2022.02.027](https://doi.org/10.1016/j.apsb.2022.02.027)

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