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Scientists at Guwahati & Nagaland explore use of magnetic nanoparticles for cancer treatment

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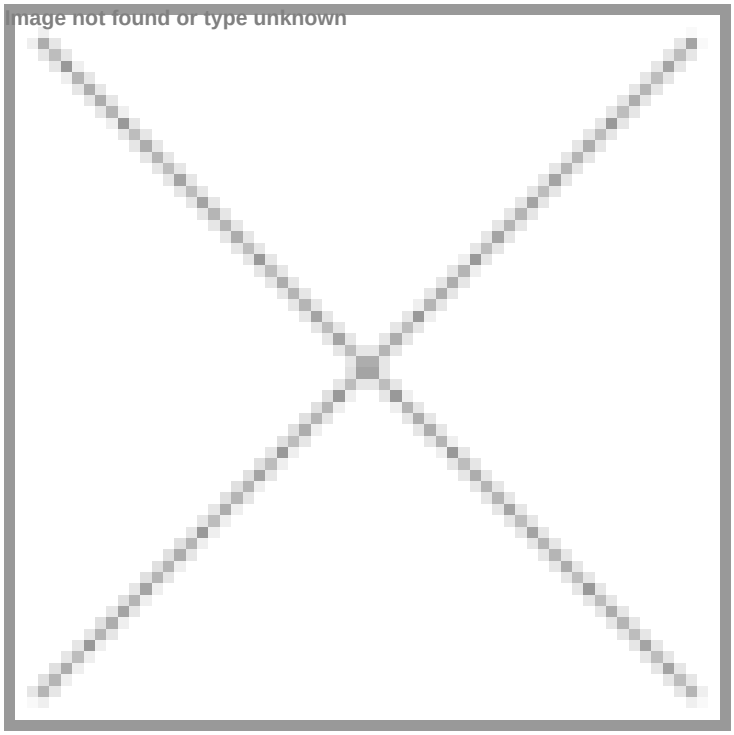
Nanomagnets offer a targeted heat generation process that can be used in treating cancer cells



An efficient magnetic system has been developed by a team of scientists from Guwahati-based Institute of Advanced Study in Science and Technology (IASST), an autonomous institute of Department of Science and Technology (DST), Govt. of India, in collaboration with National Institute of Technology (NIT) Nagaland, with newly systhesised nanocrystalline cobalt chromite magnetic nanoparticles that can treat cancer by increasing temperature of tumour cells through a procedure called magnetic hyperthermia for treating cancer.

Nanomagnets have opened up a targeted heat generation process (hyperthermia) that can be used in treating cancer cells with comparatively less side effects and is controlled by the magnetic field from outside. Tuning the physical properties of nanomagnets is essential to make them usable for hyperthermia applications. Due to the direct impact of various physical parameters of nanomagnets on the self-heating efficacy, it is challenging to create and control biofriendly coated magnetic nanoparticles with an effective heat generation efficiency.

These magnetic nanoparticles' inhomogeneous in fluid form was used further to generate heat under the applied alternating magnetic field subjection. The heat generation method of magnetic nanoparticles can be used in treating cancer cells by elevating the cell temperature up to $46^{o}C$ for a specific duration, causing necrosis in the injured cells when applied to particular cancer locations. Thus, superparamagnetic nanoparticles act as nano-heaters and can potentially be utilised in magnetic hyperthermia applications for treating cancer and offering alternative cancer therapy.