Next Generation Biomedicine Low Frequency Magnetic Nanoparticles

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Novel polymer-coated magnetic nanoparticles (MNP-polymer complexes) have been developed that can be used in a variety of biomedical, therapeutic, and industrial applications. The iron oxide magnetic nanoparticle cores are synthesized by thermal decomposition yielding a tunable, uniform size. These unique polymer coatings have been shown to promote enhanced uptake into tumor and other cells. The MNP-polymer complexes can be efficiently and remotely actuated by super low frequency AC magnetic field with variety of field strengths which trigger cell death. The novel polymer coating enables loading of therapeutic and contrast imaging agents which can be modified to accommodate various targeting moieties. Proof of concept data has been generated in cancer cell lines.

Advantages:

- Customized to a specific application
• High safety and biocompatibility profile
• Magnetic nanoparticles can be easily and safely scale-up
• Prolonged shelf-life
• Lyophilization compatible
• Robust quality control

Applications:

• Biomedical Imaging
• Therapeutic (Drug Delivery)
• Research Tools
• Diagnostics
• Industrial Ag Biotechnology

Related Publications:

• Recent Publication
• Remote Actuation of Magnetic Nanoparticles For Cancer Cell Selective Treatment Through Cytoskeletal Disruption
• Theranostic multimodal potential of magnetic nanoparticles actuated by non-heating low frequency magnetic field in the new-generation nanomedicine
Inventors

Alexander Kabanov

For additional information, contact

Champ Gupton
Commercialization Manager
champ.gupton@unc.edu
919.966.4132