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New Magneto-Fluorescent Hybrid Polymer Nanogel for Theranostic Applications

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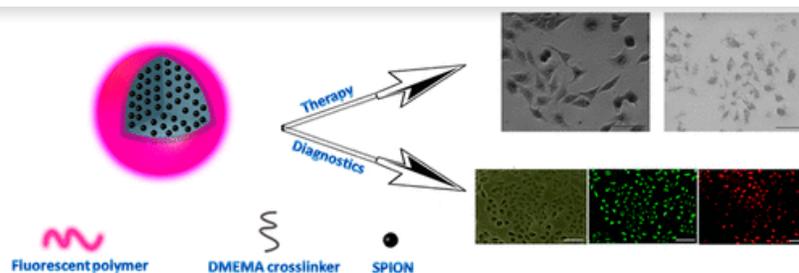
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Herein we have reported a new magneto-fluorescent nanogel built on photoluminescent comonomer [PEG-maleic acid-glycine], *N,N*-dimethyl aminoethylmethacrylate and citrate-capped superparamagnetic iron oxide nanoparticles (SPION). The nanogel was found to have core-shell morphology (SPION core and PEG shell) with particle size around 80 nm. The cytocompatibility of the synthesized nanogel was studied using MTT, live/dead assays, and flow cytometry. The cellular uptake of the nanogel on cervical cancer cell line Hela evaluated through Prussian blue staining and fluorescence microscopy has revealed good cancer cell imaging capability. Magnetic hyperthermia experiments have shown that the synthesized nanogel caused the lysis of cancer cells. The fluorescence bioimaging capability of the nanogel in the murine model has shown good near IR imaging capability. Overall, the reported results suggest that the magneto-fluorescent nanogel shows promising future potential for cancer theranostic applications.

KEYWORDS: [magneto-fluorescent](#), [theranostics](#), [nanogel](#)

Supporting Information

The Supporting Information is available free of charge on the [ACS Publications website](#) at DOI: [10.1021/acsabm.8b00616](https://doi.org/10.1021/acsabm.8b00616).

- Molecular weight determination, DLS, zeta potential, and specific magnetic power experimental results ([PDF](#))

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Applications

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