

Accepted Manuscript

Antimicrobial colloidal hydrogels assembled by graphene oxide and thermo-sensitive nanogels for cell encapsulation

Wenhua Cheng, Yunhua Chen, Lijing Teng, Bingheng Lu, Li Ren, Yingjun Wang

PII: S0021-9797(17)31304-8
DOI: <https://doi.org/10.1016/j.jcis.2017.11.018>
Reference: YJCIS 23005

To appear in: *Journal of Colloid and Interface Science*

Received Date: 18 September 2017
Revised Date: 7 November 2017
Accepted Date: 7 November 2017

Please cite this article as: W. Cheng, Y. Chen, L. Teng, B. Lu, L. Ren, Y. Wang, Antimicrobial colloidal hydrogels assembled by graphene oxide and thermo-sensitive nanogels for cell encapsulation, *Journal of Colloid and Interface Science* (2017), doi: <https://doi.org/10.1016/j.jcis.2017.11.018>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Antimicrobial colloidal hydrogels assembled by graphene oxide and thermo-sensitive nanogels for cell encapsulation

Wenhua Cheng,^a Yunhua Chen,^{a,*} Lijing Teng,^a Bingheng Lu,^b Li Ren^{a,*} and Yingjun Wang^{b,*}

^a School of Materials Science and Engineering, South China University of Technology, Guangzhou 510640, China

^b National Engineering Research Center for Tissue Restoration and Reconstruction, South China University of Technology, Guangzhou 510006, China

Keywords: colloidal hydrogel; antibacterial activity; cell encapsulation; nanogel; graphene oxide

ABSTRACT: Hydrogels are promising 3D materials that have demonstrated increasing applications in the encapsulation and delivery of drugs and cells. Herein we report an injectable colloidal hydrogel that directly assembled by graphene oxide (GO) and thermo-sensitive nanogels (tNG). The pH dependent hydrogen bonding interactions between the carboxyl and oxethyl groups induce the reversible assembly of GO and nanogels. The hydrogel is mouldable and can be shaped into different macroscopic objects, and the mechanical strengths are tunable with pH and temperature adjustment. The hybrid hydrogel by its own possesses high antibacterial activity, and demonstrates responsive drug release behaviour and high viability of 3D encapsulated cells. We expect this hybrid colloidal hydrogel can serve as an interesting scaffold for active cargo delivery and cell culture.

*Corresponding author.

E-mail address: msyhchen@scut.edu.cn (Yunhua Chen), psliren@scut.edu.cn (Li Ren), imwangyj@163.com (Yingjun Wang)

Download English Version:

<https://daneshyari.com/en/article/6992844>

Download Persian Version:

<https://daneshyari.com/article/6992844>

[Daneshyari.com](https://daneshyari.com)