

A visible light responsive nanofiber drug delivery system

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Over the last decade, research has focused on stimuli responsive drug delivery systems (DDS), that release drug in response to an externally-applied stimulus. In contrast to other triggers, light is the last invasive, the drug release can be varied by adjusting the light intensity and time of exposure, without using an advanced equipment. Nanofibers offer distinct operational advantages – high porosity, high specific surface area and biomimetic similarity to extracellular matrix. Our potential DDS consists of polymer nanofiber mat reinforced with goethite nanowires obtained by needle-less electrospinning process. The goethite is acting as drug carrier and provide release upon light exposure [1]. In our model system we demonstrate the visible light triggered release of methylene blue (MB) from nanofiber composite into aqueous environment. The influence of goethite concentration in to nanocomposite on the release rate and the amount of released MB were evaluated.

References:

1. A. Šutka, M. Järvekülg, K. A. Gross, M. Kook, T. Käämbre, M. Visnapuu, G. Trefalt, A. Šutka, Visible light to switch-on desorption from goethite, *Nanoscale*, 11 (2019) 3794-3798.

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