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(54) **FRET-BASED MESOPOROUS SILICA NANOPARTICLES FOR REAL-TIME MONITORING OF DRUG RELEASE**

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CPC ***A61K 47/40*** (2013.01); ***A61K 47/02*** (2013.01)

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See application file for complete search history.

(56) **References Cited**

PUBLICATIONS

Lai et al, ACS Nano, 2013.*

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(57) **ABSTRACT**

A compound comprising: (a) a drug carrier comprising coumarin-labeled-cysteine tethered mesoporous silica nanoparticles (MSNs) loaded with a pharmaceutically active agent, and (b) a fluorescein isothiocyanate-β-cyclodextrin (FITC-β-CD) covalently linked to said cysteine and blocking the release of said pharmaceutically active agent from said nanoparticles, wherein cleavage of said covalent linkage removes said cyclodextrin and releases said pharmaceutically active agent, and said coumarin and said fluorescin form a donor-acceptor pair so that said drug carrier has a first emission wavelength when the covalent linkage is intact and the cyclodextrin said present and a second emission wavelength after cleavage of said covalent linkage to remove said cyclodextrin and release said pharmaceutically active agent.

15 Claims, 5 Drawing Sheets