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Near-infrared rechargeable “optical battery” implant for irradiation-free photodynamic therapy

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1 Near-Infrared Rechargeable “Optical Battery” Implant for 2 Irradiation-Free Photodynamic Therapy

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21 Abstract

22 As a minimal or noninvasive therapeutic method for tumors, photodynamic therapy (PDT)
23 induced by the external laser irradiations has attracted great attentions. However, the UV-visible
24 responsive property with low tissue penetration and photothermal effect from the prolonged
25 irradiation impedes their further applications. Herein, a near-infrared (NIR) rechargeable “optical
26 battery” for irradiation-free PDT is fabricated by embedding upconversion materials, persistent
27 luminescence materials, photosensitizer into biocompatible polydimethylsiloxane. After 5
28 seconds quickly charged by 980-nm NIR laser, the PDT “optical battery” can generate green
29 persistent luminescence and produce cytotoxic singlet oxygen for continuous irradiation-free PDT

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