Optical manipulation of shape-morphing elastomeric liquid crystal microparticles doped with gold nanocrystals

```
00
a
Yaoanun JIan Ean
                                                             Bo an
                                           а
                                                                            nu k
                 an an <sub>M</sub>auk
Depart ent of 1 ys cs Mater a c ence and En neer n 1 ro ra Depart ent of E ectr ca Co puter
& Ener y En neer n and L qu d Crysta Mater a s Lesearc Center n vers ty of Co orado Bou der
Co orado & SA
<sup>2</sup>Centre for Opt ca and E ectro a net c_{\downarrow} eseare Z e an n vers ty Han z oul 5
eop e skepub c of C na

Inst tut Cur e Centre dekec erc e CN Mk
                                                           n vers té <sub>1</sub> erre et Mar e Cur e
52 | ar s cedex 5 France
<sup>4</sup>Depart ent of C e stry and B oc e stry and L qu d Crysta Mater a s≰esearc Center
n vers ty of Co orado Bou der Co orado SA

5Depart ent of E ectro a net c En neer n soya Inst tute of ec no o y stoc o swede e enewab e and susta nab e Ener y Inst tute Nat ona senewab e Ener y Laboratory and n vers ty of
                                                                                            stoc o sweden
Co orado Bou der Co orado &
                                         \mathbf{S}^{A}
```

(Received 10 March 2012; accepted 25 May 2012; published online 12 June 2012)

We demonstrate facile optical manipulation of shape of birefringent colloidal microparticles made

microparticles were infiltrated with the gold nanocrystals in

bonds and multiphoton excitation self-fluorescence of the LCE, as well as two-photon luminescence signals from gold nanoparticle $\,$ aggregates. 25

laser beam is turned off. This is confirmed by CARS-PM imaging of $\mathbf{n}(\mathbf{r})$ and chemical composition of elastomeric