

Electronic Supplementary Information

Continuously Tunable Colloidal Quantum Dot Distributed Feedback Lasers Integrated on Chirped Surface Grating

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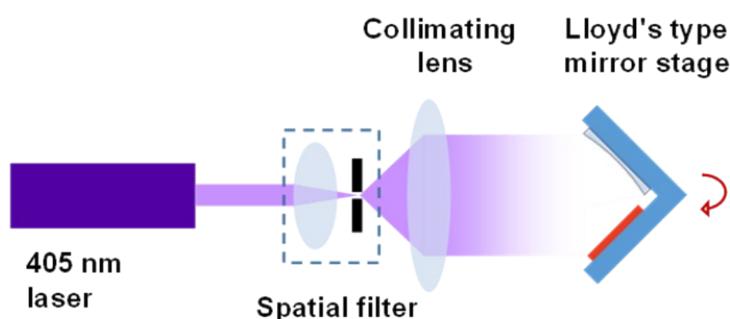


Figure S1. Laser interference lithography setup modified for fabricating period-chirped gratings.

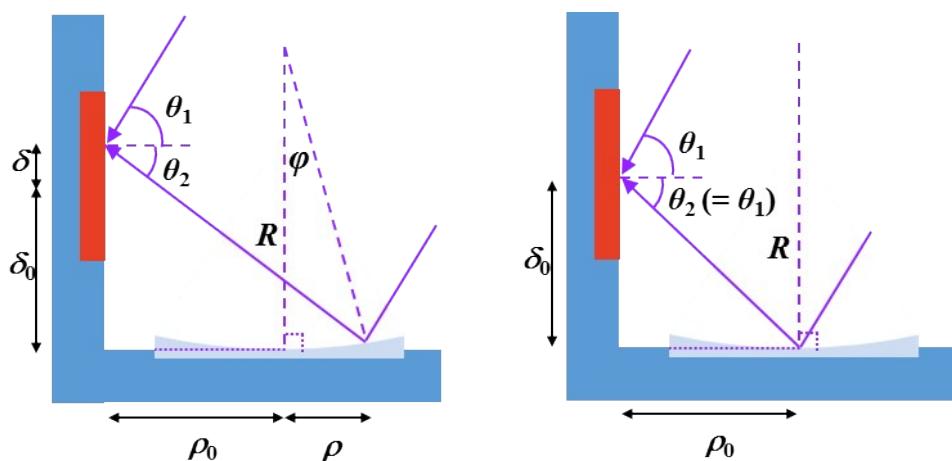


Figure S2. Schematic illustration of light paths in modified Lloyd's mirror geometry.

By using the notation in Figure S2, the following equations can be derived:

$$\Lambda(\varphi) = \frac{\lambda}{\sin \theta_1 + \sin \theta_2} = \frac{\lambda}{\sin \theta_1 + \sin(\theta_1 - 2\varphi)}$$

$$\rho = R \sin \varphi$$

$$\delta_0 = \rho_0 \tan \theta_1$$

$$\tan(\theta_1 - 2\varphi) = \frac{\delta + \delta_0 - R + \sqrt{R^2 - \rho^2}}{\rho + \rho_0}$$

$$\delta(\varphi) = (R \sin \varphi + \rho_0) \tan(\theta_1 - 2\varphi) - \rho_0 \tan \theta_1 + R(1 - \cos \varphi)$$

These coupled equations provide the information on the relationship between the grating period Λ and the position δ .

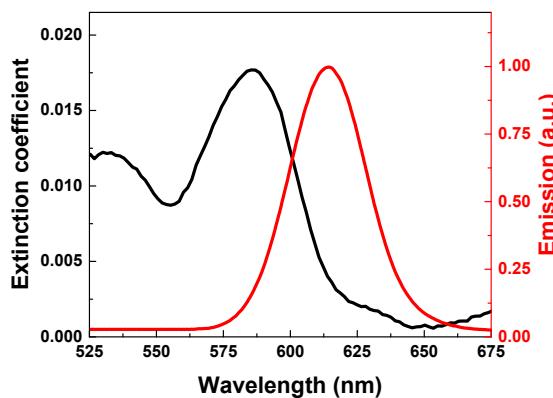


Figure S3. Absorption (black) and emission (red) spectra obtained from a thin film of the CdSe/CdS/ZnS CQDs.

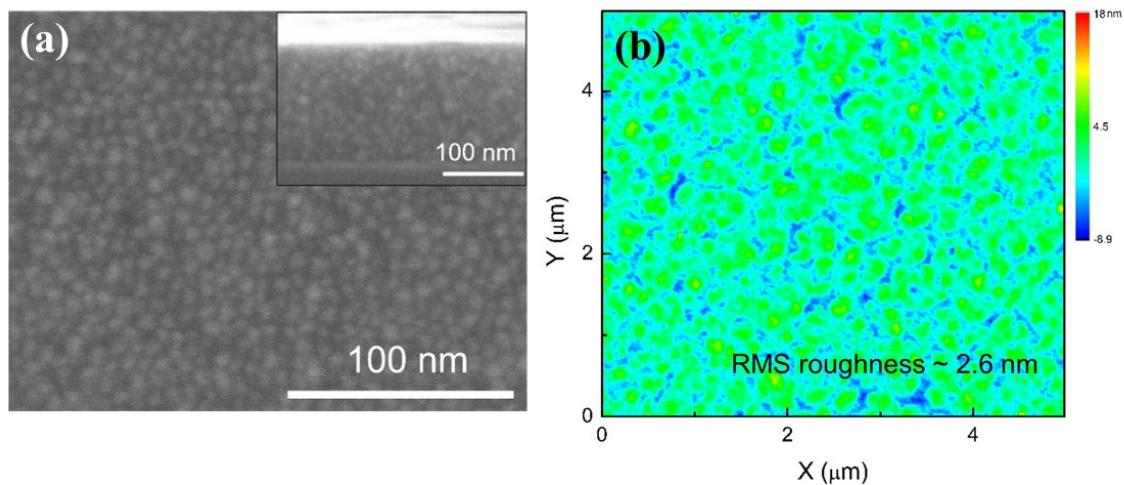


Figure S4. Top surface images of a wet-transferred CQD film from (a) SEM and (b) AFM. The inset in (a) is a cross-sectional image of the CQD film.

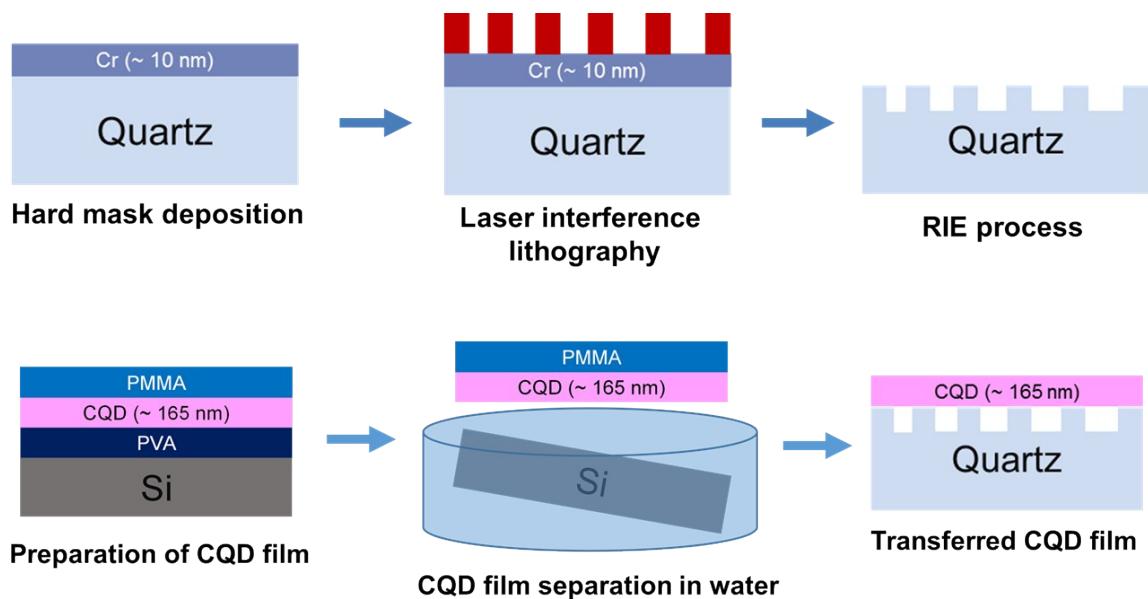


Figure S5. Flow chart of the CQD DFB device fabrication.

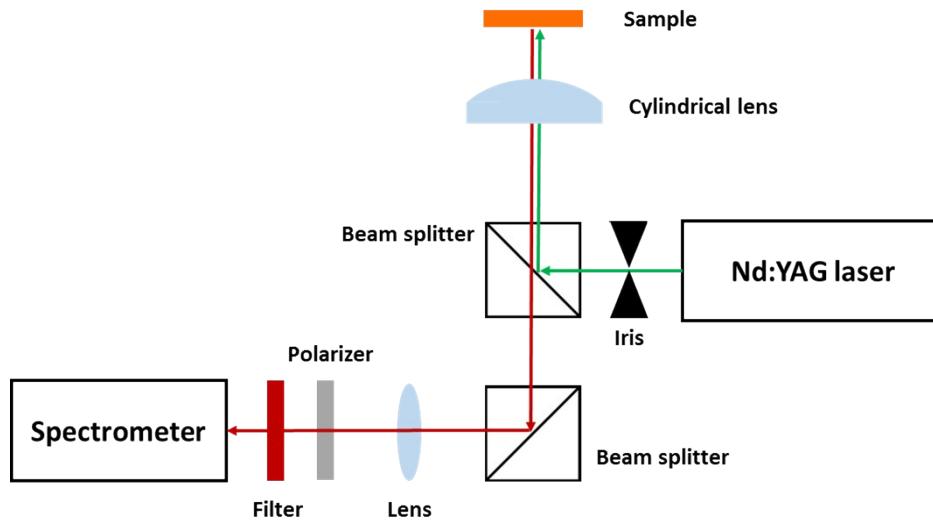


Figure S6. Schematic of the photoluminescence measurement setup.