Effective Optical Diffuser Based on Interfacial Hydrogen-bonding Polymer Complexation

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Figure S1 Photographs of (PVPON/PAA)$_n$ films (n = 10, 20, 30, 40, 60, and 80).
**Figure S2** The photographs of CNP solution before (left) and after standing for 24 h (right).

**Figure S3** The size distribution of the CNP in the solution.

The size of CNP in solution was characterized via dynamic light scattering (DLS, BI-200SM, Brookhaven) at room temperature.
Figure S4 QCM monitoring the LbL assembly of PVPON/PAA and PVPON/CNP film.

(Quartz crystal microbalance with dissipation (QCM-D, QCM Explore, Biolin) was used to study the growth behaviors of PVPON/PAA and PVPON/CNP. The Au-coated QCM-D sensors were immersed in mercaptoacetic acid aqueous solution (10 mmol) overnight before using and then dried with a stream of N2 after washed with DI water. PVPON solution and PAA (or CNP solution) are both diluted to 0.5 mg/mL and then were alternately pumped into cell for 10 min, each followed by pumping water for 10 min.)
**Figure S5** The thickness of the films as a function of the assembly cycles. The SEM images of the cross-section of (PVPON/PAA)$_{40}$ and (PVPON/CNP)$_{40}$ film.

**Figure S6** Photographs of (PVPON/CNP)$_n$ films ($n = 10, 20, 30, 40, 60$, and $80$).
Figure S7 SEM images of the (PVPON/CNP)$_n$ films ($n = 10$, 20, 30, 40, 60, and 80).