

## Supporting information for "Controlling Magic Size of White Light-emitting CdSe Quantum Dots"

Sheng Dai<sup>1</sup>, Yu-Sheng Su<sup>2</sup>, Shu-Ru Chung<sup>2,\*</sup>, Kuan-Wen Wang<sup>1,3,\*</sup>, and Xiaoqing  
Pan<sup>1,4,\*</sup>

<sup>1</sup> Department of Chemical Engineering and Materials Science, University of  
California-Irvine, Irvine, California 92697, United States

<sup>2</sup> Department of Materials Science and Engineering, National Formosa University,  
No. 64, Wun Hua Road, Huwei Township, Yunlin County, 63201, Taiwan

<sup>3</sup> Institute of Materials Science and Engineering, National Central University, No.  
300, Zhongda Rd., Zhongli District, Taoyuan City 32001, Taiwan

<sup>4</sup> Department of Physics and Astronomy, University of California-Irvine, Irvine,  
California 92697, United States

\*Corresponding author E-mail: xiaoqing.pan@uci.edu  
srchung@nfu.edu.tw  
kuanwen.wang@gmail.com

**Table S1. Absorption and emission wavelengths and QYs of M-, mix, and R-CdSe prepared at 160-220 °C.**

Reaction temperature	Samples	Absorption peak (nm)		Emission peak (nm)		QY (%)
		1 <sup>st</sup>	2 <sup>nd</sup>	1 <sup>st</sup>	2 <sup>nd</sup>	
160 °C	M	403	-	438/537	-	58
	mix	403	500	438	513	40
	R	-	511	-	537	3
180 °C	M	403	-	438/528	-	42
	mix	403	508	440	525	37
	R	-	562	-	574	8
200 °C	M	404	-	436/533	-	48
	mix	404	525	438	537	39
	R	-	572	-	583	8
220 °C	M	404	-	439/532	-	64
	mix	404	500	440	512	45
	R	-	573	-	582	6

**Table S2. The emission wavelengths and QYs before and after aging for 120 days for M, mix, and R-CdSe samples prepared at 180 °C.**

Reaction time (min)	Samples	Wavelength (nm)		QY (%)	
		A	B	A	B
2	M	436	436	42	47
4	mix	436/533	440/525	37	42
60	R	574	574	8	6

A: as-prepared; B: aging for 120 days

**Table S3. The QYs and device properties of various M samples.**

Sample	QY (as/purified)	Epoxy in encapsulated material (%)	CIE (x, y)	CCT (K)	CRI	Efficacy (lm/W)
M-160	58/35	0	(0.44, 0.44)	3140	77	0.31
		50	(0.34, 0.34)	5200	88	2.00
M-180	42/31	0	(0.50, 0.43)	2020	83	0.45
		50	(0.31, 0.34)	6460	85	0.70
M-200	48/34	0	(0.40, 0.40)	3700	89	0.81
		50	(0.42, 0.45)	3608	80	1.86
M-220	64/39	0	(0.43, 0.42)	3170	88	0.56
		50	(0.29, 0.31)	8350	84	1.28

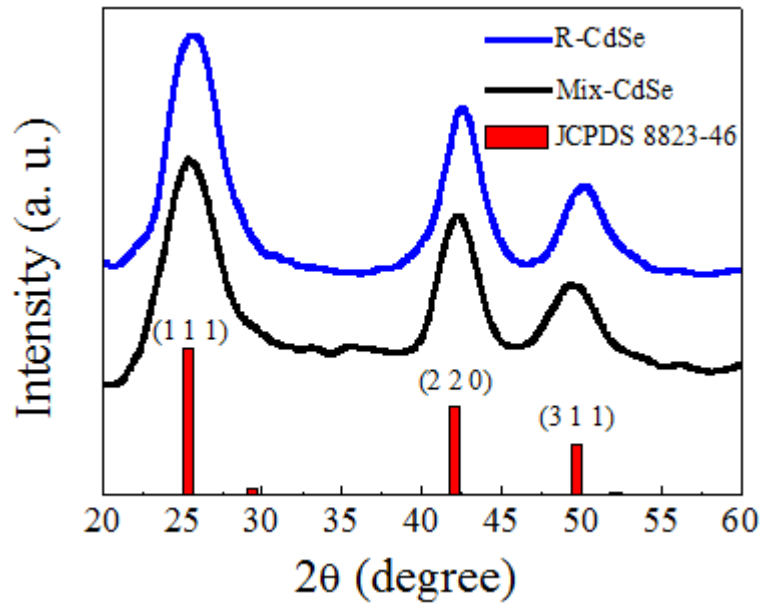


Figure S1. XRD patterns of R- and Mix-CdSe QDs.

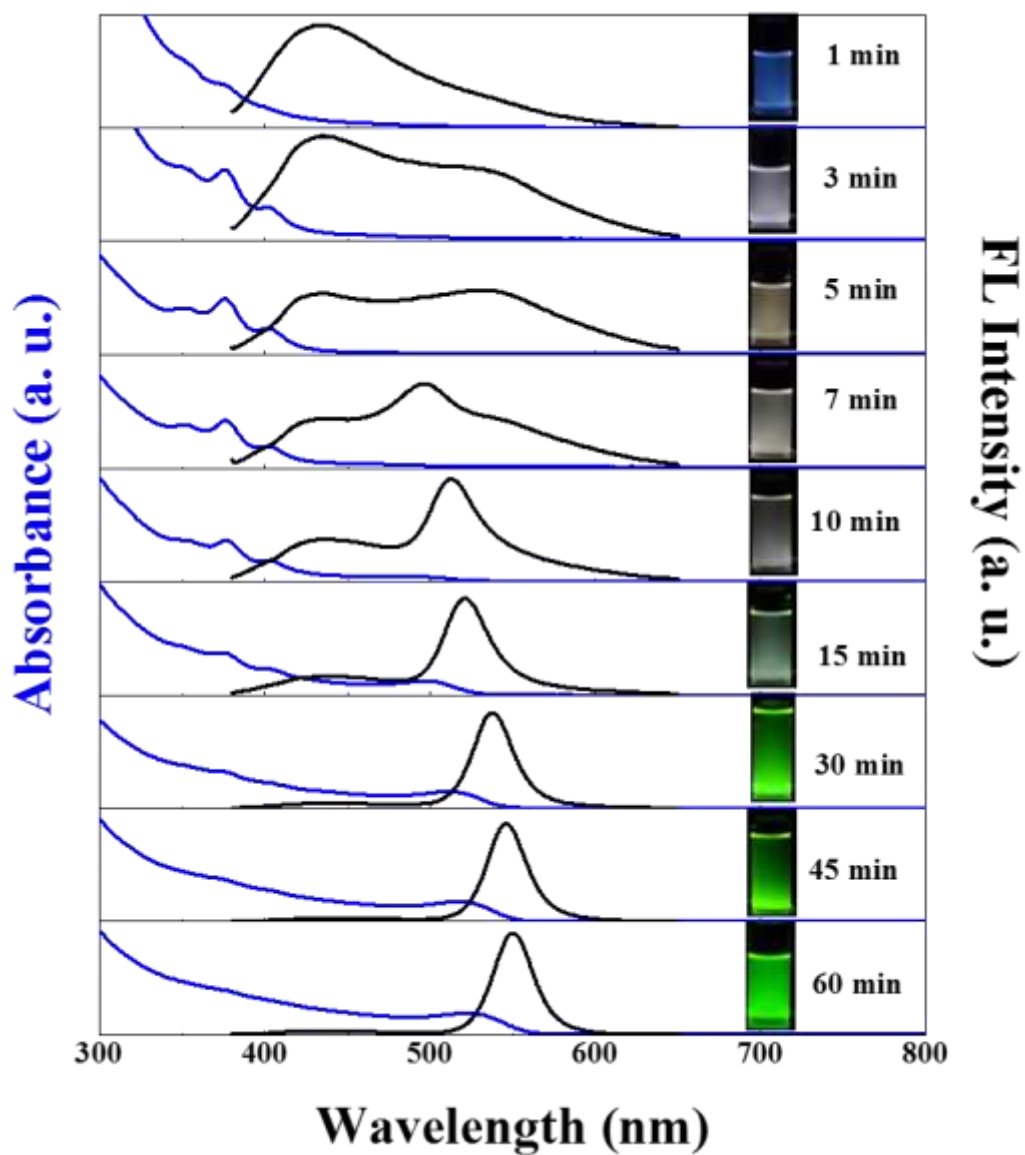
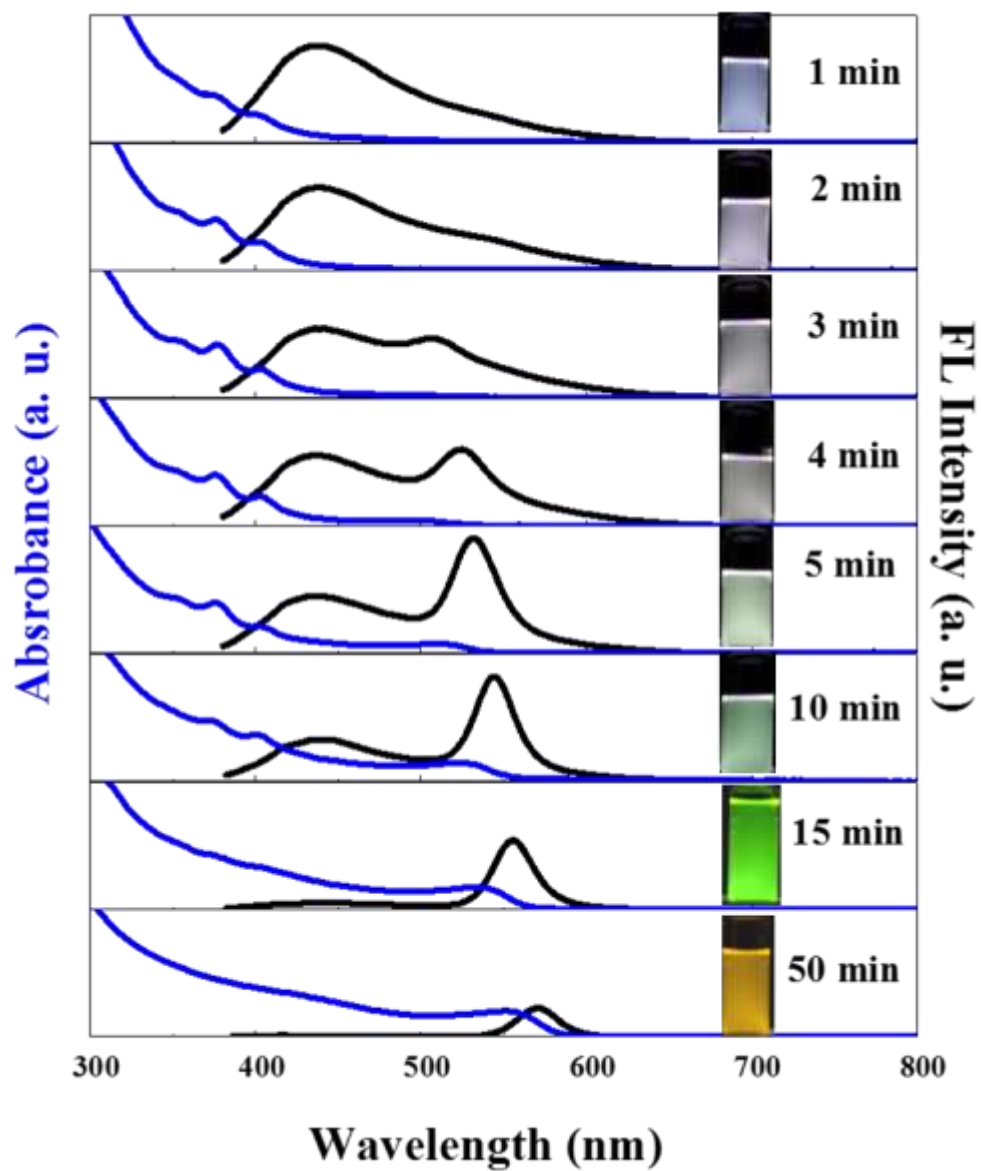


Figure S2. The temporal evolution of UV-Vis and FL spectra of samples prepared at 160 °C.



**Figure S3.** The temporal evolution of UV-Vis and FL spectra of samples prepared at 180 °C.

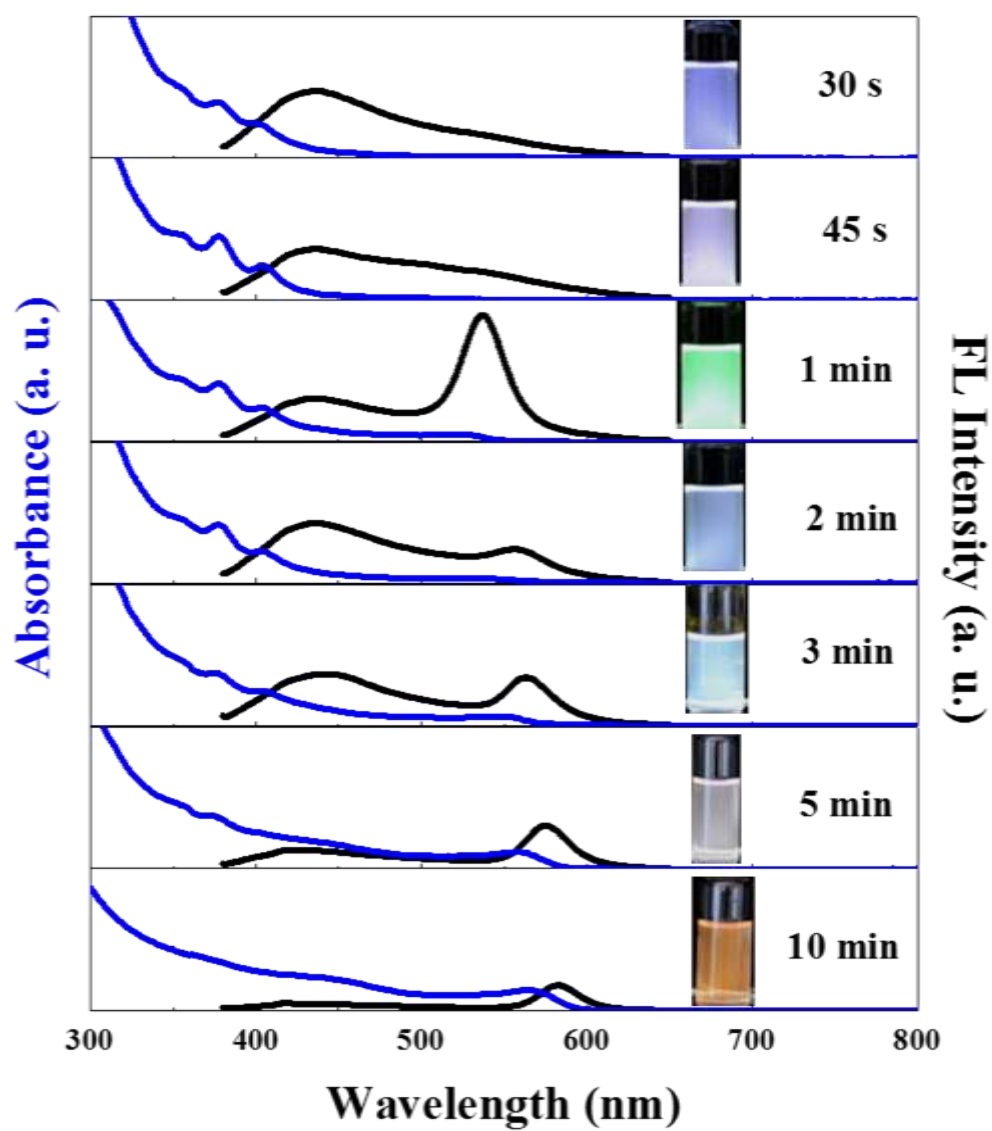


Figure S4. The temporal evolution of UV-Vis and FL spectra of samples prepared at 200 °C.



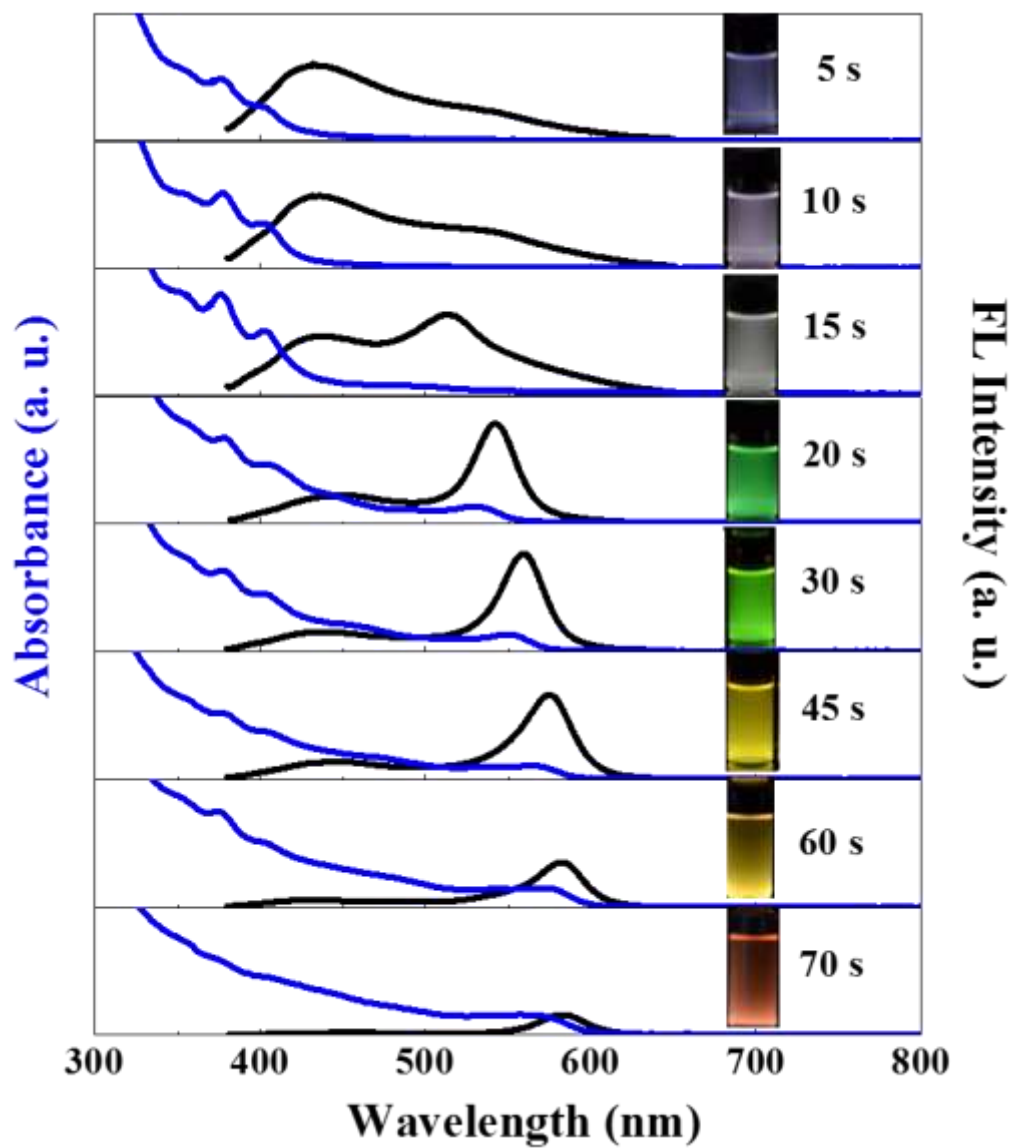
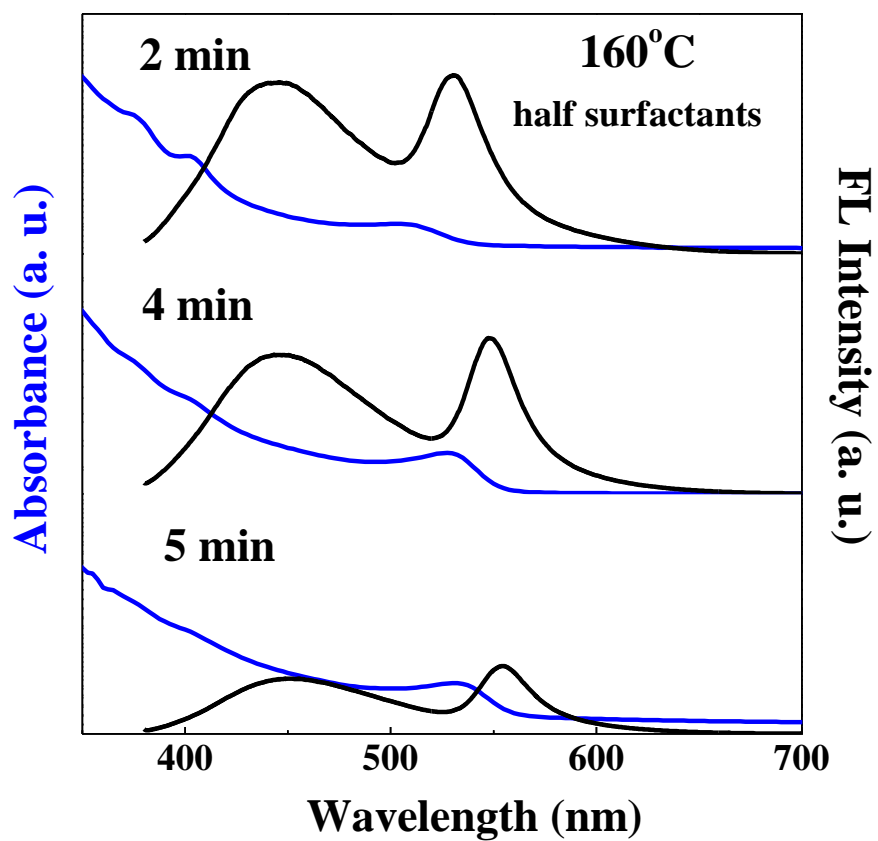


Figure S5. The temporal evolution of UV-Vis and FL spectra of samples at 220 °C.



**Figure S6.** The temporal evolution of UV-Vis and FL spectra of samples at 160 °C with half of HDA and ODE.

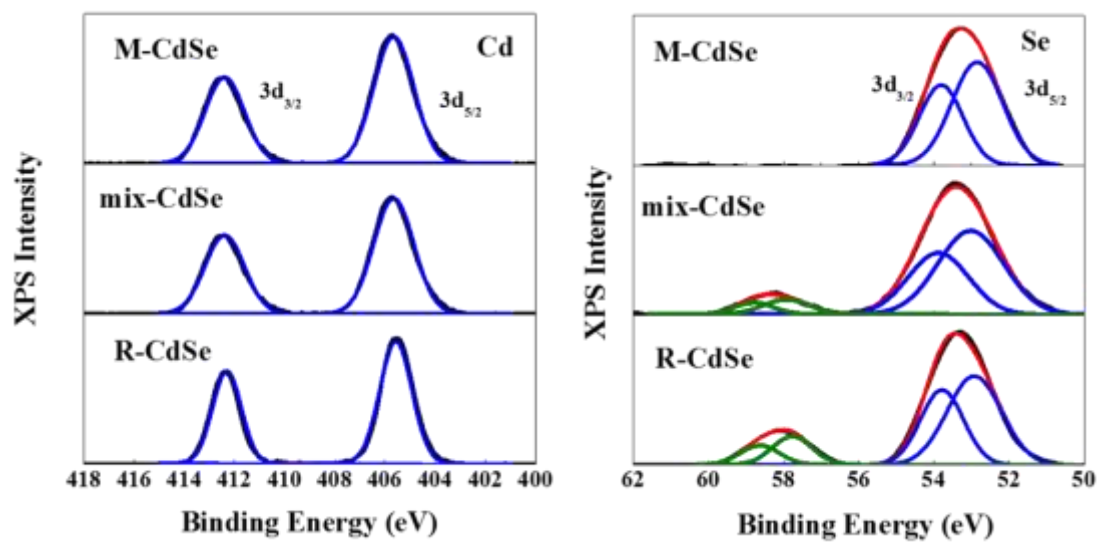


Figure S7. The XPS spectra of M-, mix, and R-CdSe prepared at 180 °C.

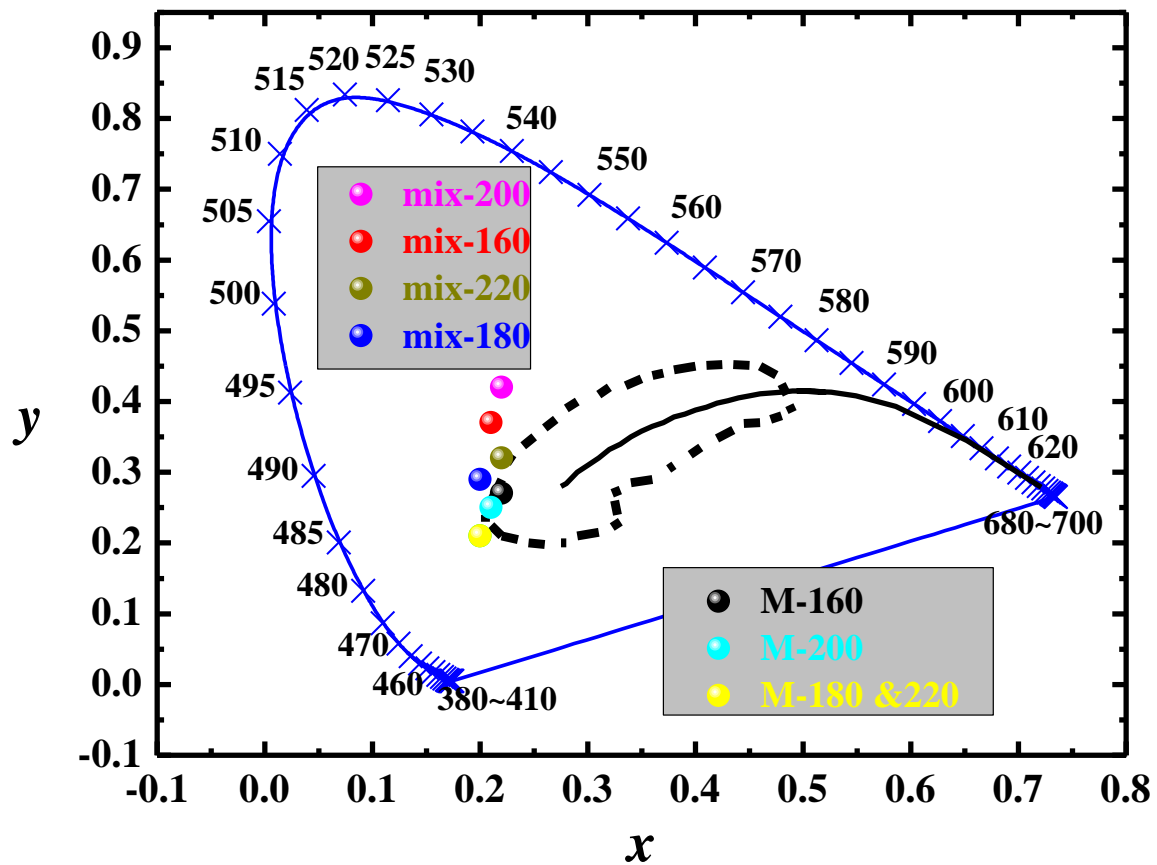


Figure S8. The CIE of the M- and mix- CdSe prepared at 160-220 °C.