

## Supplementary information

### **EDTA-assisted hydrothermal synthesis of cubic SrF<sub>2</sub> particles and their catalytic performance for the pyrolysis of 1-chloro-1,1- difluoroethane to vinylidene fluoride**

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Table S1. Textural parameters of SrF<sub>2</sub> samples

Samples	Specific surface area (m <sup>2</sup> /g)	Total pore volume (cm <sup>3</sup> /g)
SrF <sub>2</sub> -H	15.0	0.26
SrF <sub>2</sub> -P	5.5	0.14

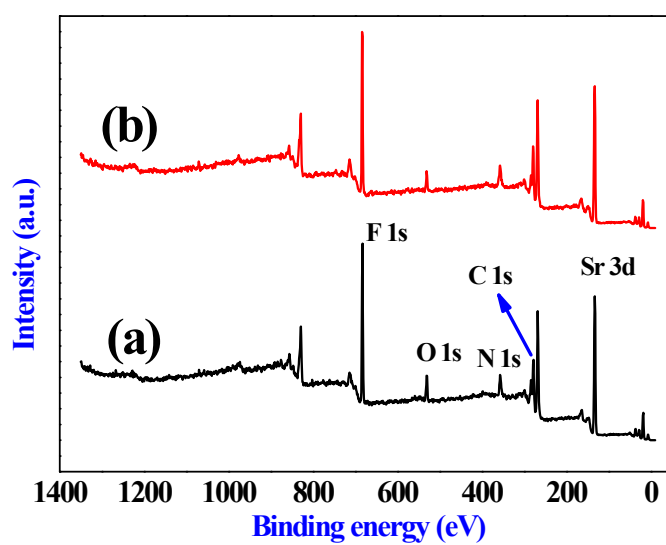


Fig. S1. The whole XPS spectrum of SrF<sub>2</sub> prepared by hydrothermal method at optimal synthesis parameters before (a) and after (b) calcination.

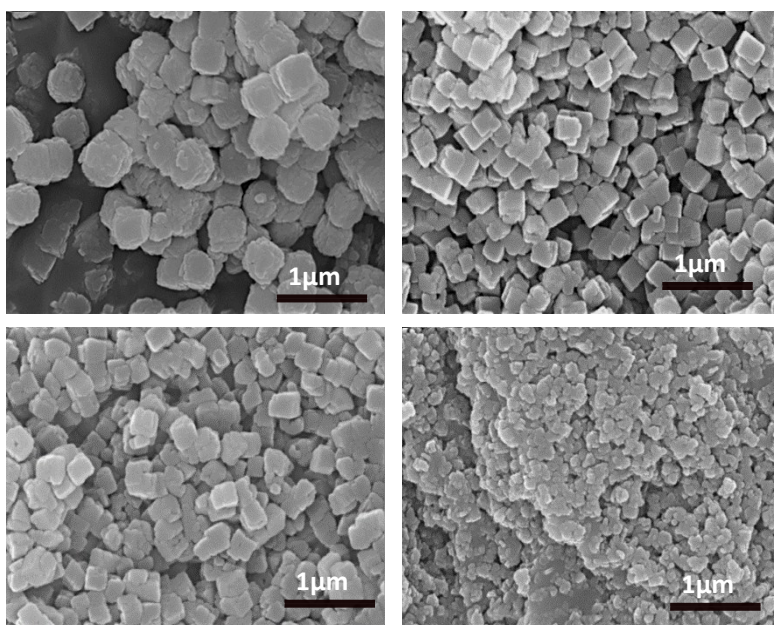


Fig. S2 SEM images of the SrF<sub>2</sub> samples obtained at different solution concentration of Sr<sup>2+</sup>: (a) 0.1M, (b) 0.25M, (c) 0.5M, (d)1M

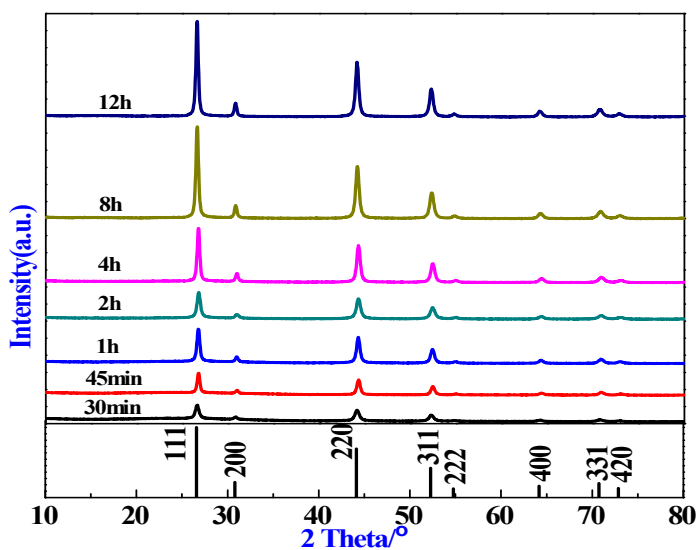


Fig. S3 X-ray diffraction patterns of the samples obtained after hydrothermal treatment for different time.

Table S2. Grain size changes of the samples obtained after hydrothermal treatment for different time.

Time	D <sub>111</sub> (2θ=26.6 )	D <sub>200</sub> (2θ=30.8)	D <sub>220</sub> (2θ=44.1)	D <sub>311</sub> (2θ=52.3 )	D <sub>222</sub> (2θ=54.8)	D <sub>400</sub> (2θ=62.2)	D <sub>331</sub> (2θ=70.8)	D <sub>420</sub> (2θ=72.8)
<b>30min</b>	16.02	16.57	15.28	14.14	15.61	14.48	13.48	18.12
<b>45min</b>	17.23	18.92	15.13	14.36	14.00	13.30	13.68	13.71
<b>1h</b>	20.10	21.92	17.64	16.81	17.10	15.73	14.88	16.18
<b>2h</b>	21.49	24.71	19.07	17.45	18.01	16.88	14.89	15.21
<b>4h</b>	22.32	23.37	18.57	16.81	16.62	15.87	13.94	15.26
<b>8h</b>	21.89	23.16	17.63	16.40	16.13	14.92	13.47	14.31
<b>12h</b>	23.01	24.05	18.48	17.40	16.42	15.83	13.83	13.66