Supplementary Information
For

Catalytic and electrochemical properties of Ag infiltrated perovskite coatings for propene deep oxidation

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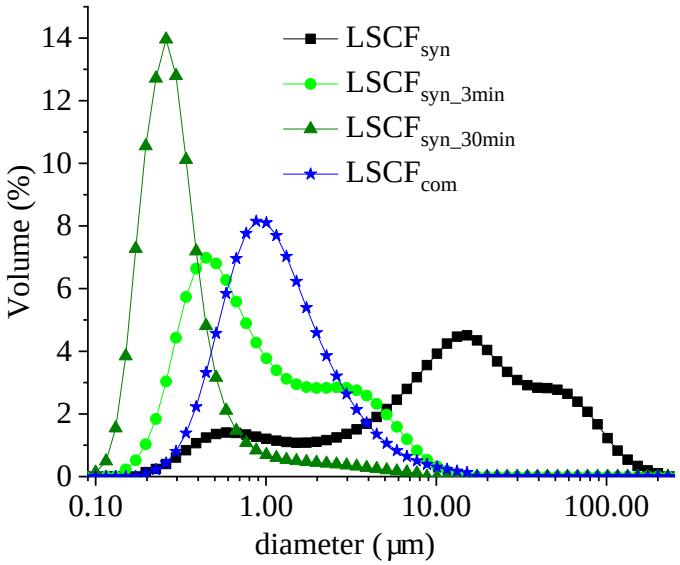

Figure S1 Grain size distribution of LSCF$_{syn}$, LSCF$_{syn_3min}$, LSCF$_{syn_30min}$ and LSCF$_{com}$.

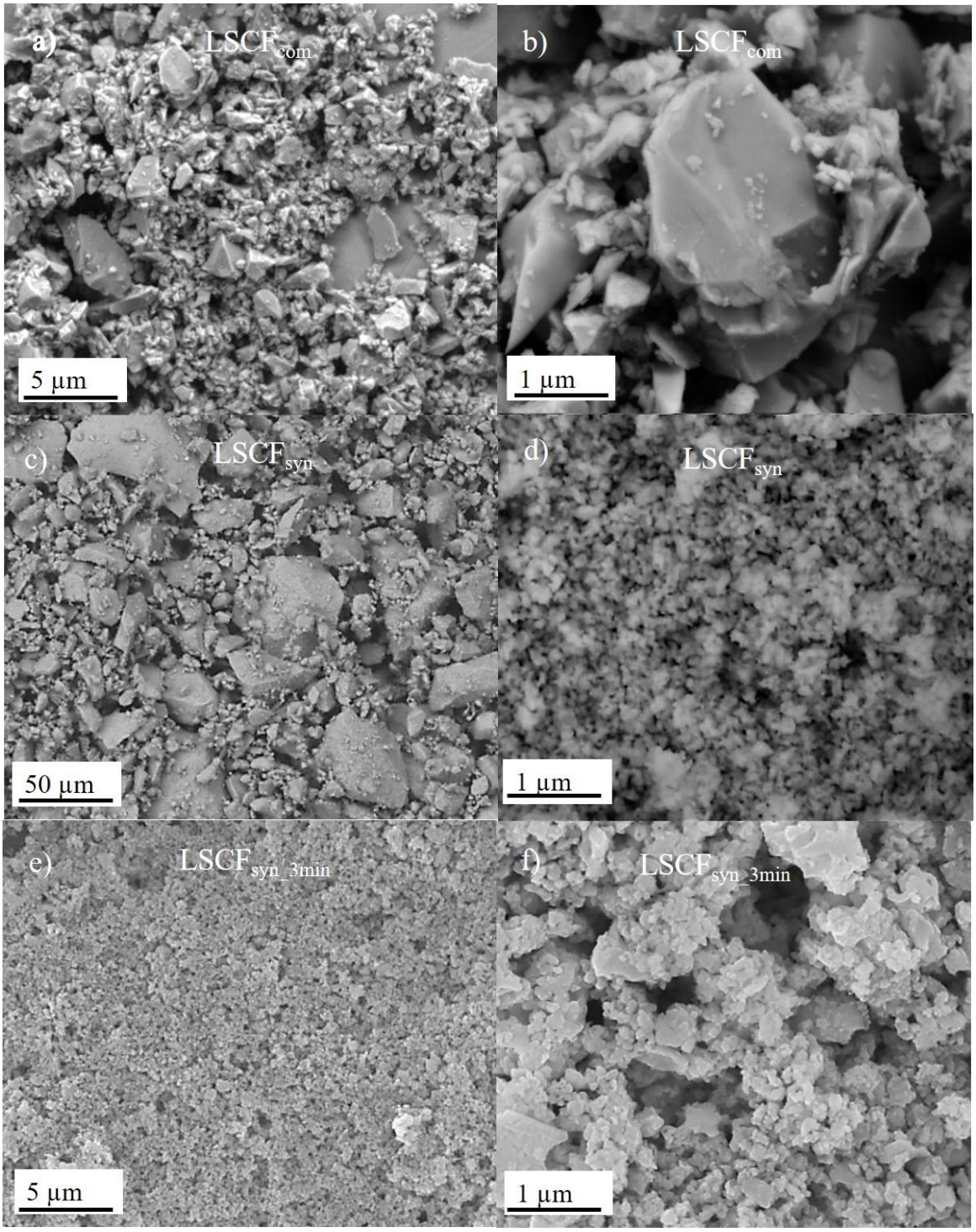

Figure S2 SEM images of the different LSCF powders. a) and b) $LSCF_{com}$, c) and d) $LSCF_{syn}$ and e) and f) $LSCF_{syn\_3min}$.

Table S1 XRF- and Surface area of $LSCF_{syn}$, $LSCF_{syn\_3min}$ and $LSCF_{com}$

	XRF				
	La	Sr	Co	Fe	SSA / m^2/g
LSCF_syn	0.6	0.4	0.19	0.8	7
LSCF_syn_3min	0.6	0.4	0.19	0.8	10
LSCF_com	0.6	0.4	0.2	0.8	4

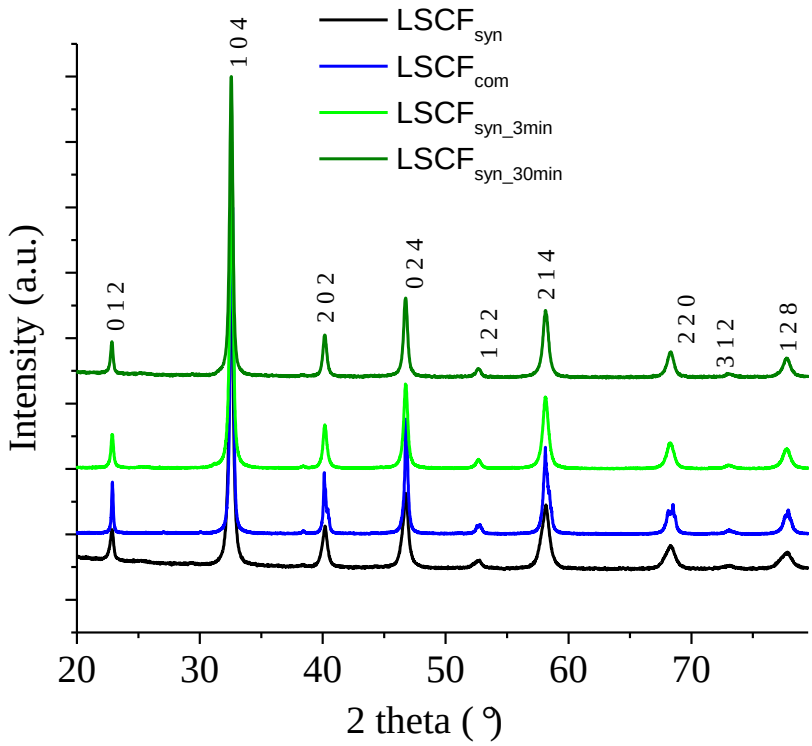

Figure S3 XRD of $LSCF_{syn}$, $LSCF_{syn\_3min}$, $LSCF_{syn\_30min}$ and $LSCF_{com}$.

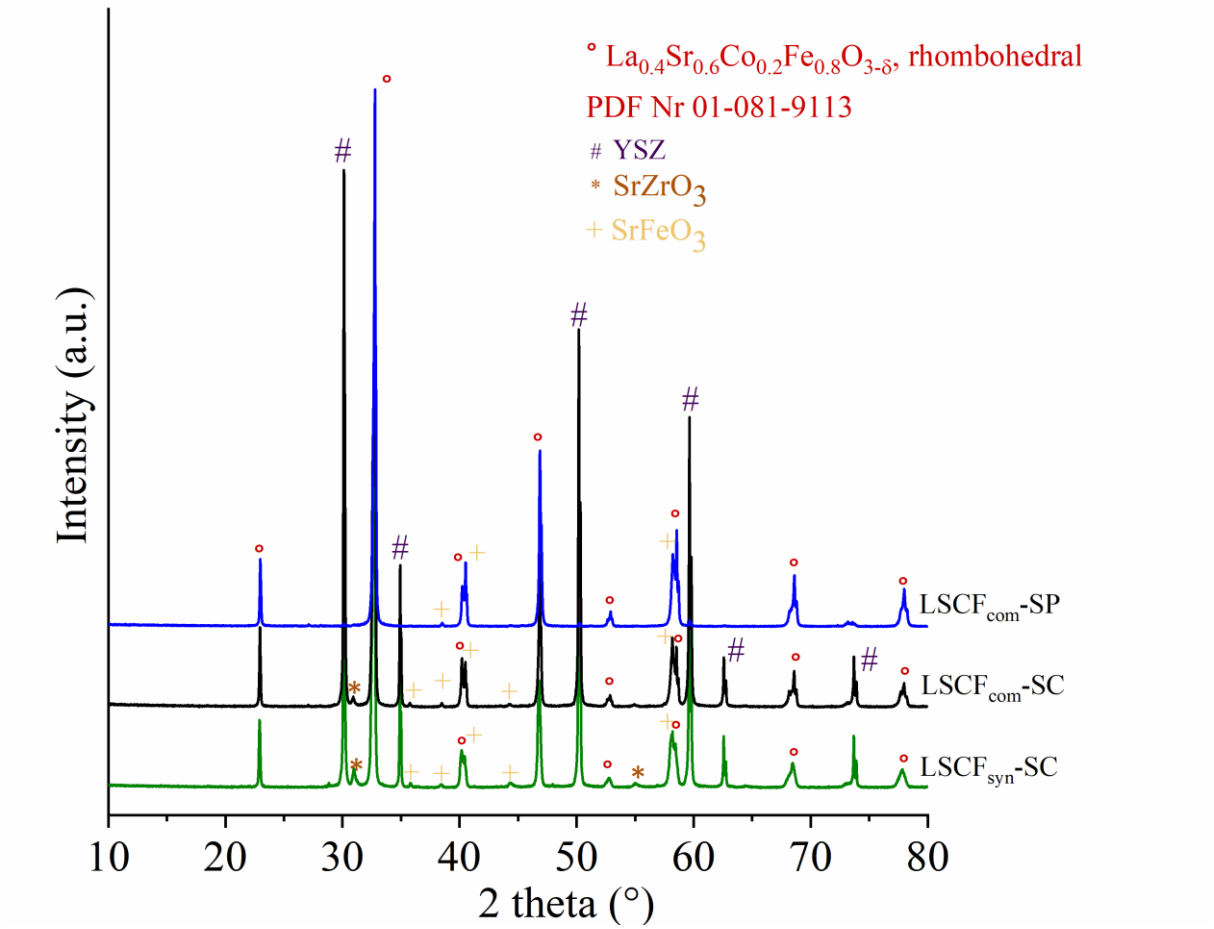

Figure S4 XRD of thin films of LSCF deposited on YSZ and calcined at 950 ℃: $LSCF_{syn}$/YSZ, $LSCF_{syn\_3min}$/YSZ, and $LSCF_{com}$/YSZ.

Table S2 Crystallite size of LSCF determined using Scherrer's equation ($LSCF_{com}$, $LSCF_{syn}$), LSCF deposited on YSZ and calcined at 950 ℃ ($LSCF_{com}$-SP, $LSCF_{com}$-SC and $LSCF_{syn}$-SC) and Ag infiltrated into the LSCF layers (Ag/$LSCF_{com}$-SP, Ag/$LSCF_{com}$-SC and Ag/$LSCF_{syn}$-SC). For LSCF, the peak at 22.9 ° was used and for Ag the peak at 38.2 °.

	crystallite size / nm	crystallite size of Ag/nm
$LSCF_{com}$	56	
$LSCF_{syn}$	26	
$LSCF_{syn}$_3min	34	
$LSCF_{com}$-SP	76	
$LSCF_{com}$-SC	85	
$LSCF_{syn}$-SC	68	
Ag/LSCF_com-SP	61	50
Ag/LSCF_com-SC	75	50
Ag/LSCF_syn-SC	80	46

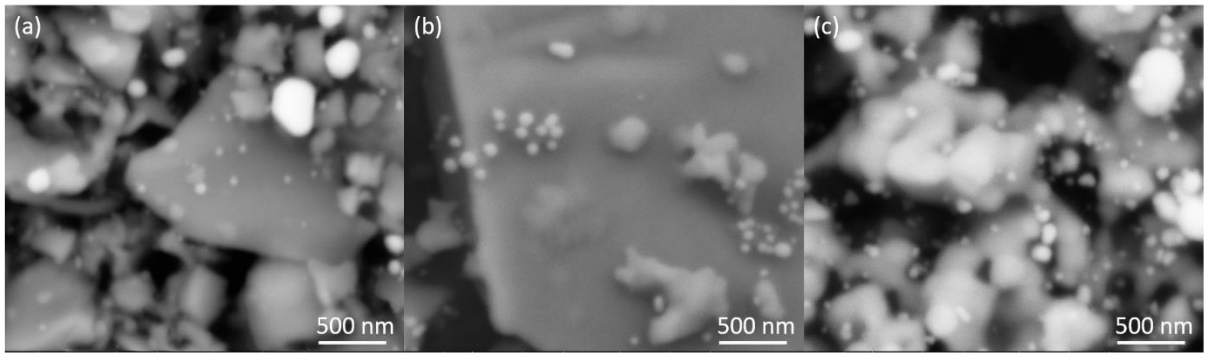

Figure S5 SEM images of the surface of Ag-infiltrated LSCF films after reduction at 300 ℃ for 2 h in 5% H_2/Ar. Images were taken at the center of each film. a) Ag/$LSCF_{com}$-SP, b) Ag/$LSCF_{com}$-SC and c) Ag/$LSCF_{syn}$-SC. Ag particles can be identified as brighter spots on the images.

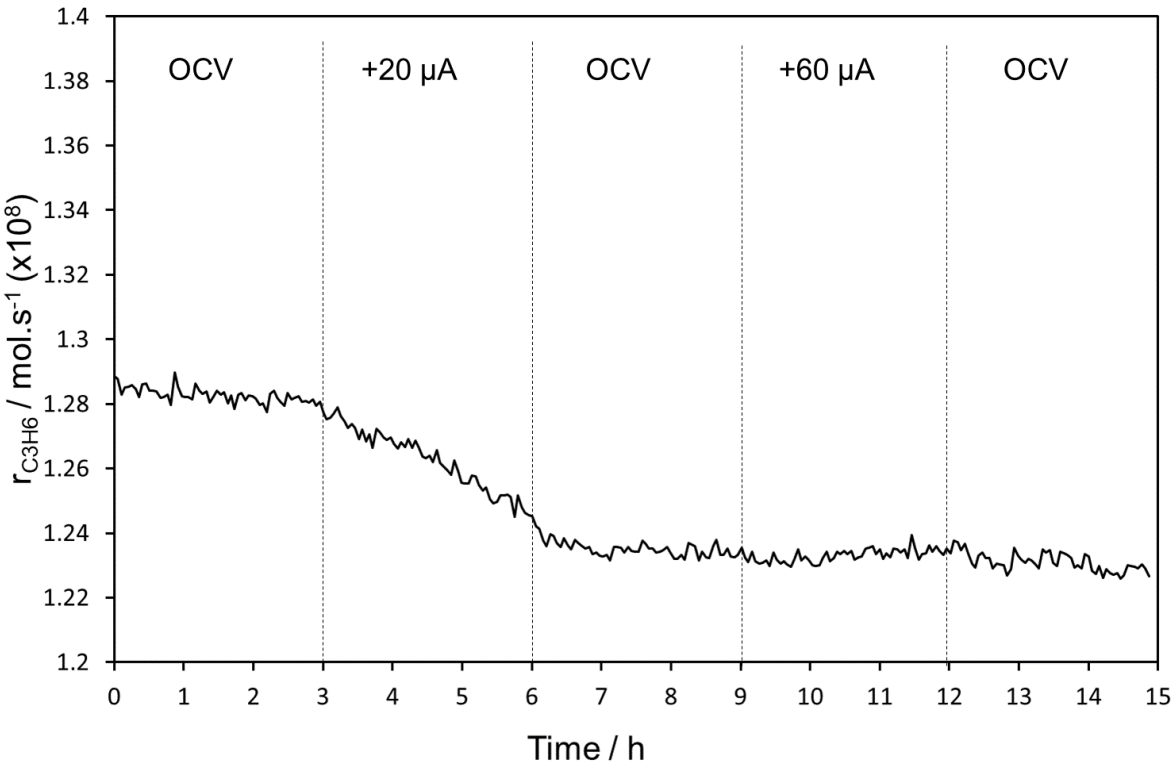

Figure S6 Impact of positive currents on the catalytic rate at 300 ℃ of Ag/$LSCF_{com}$-SP.

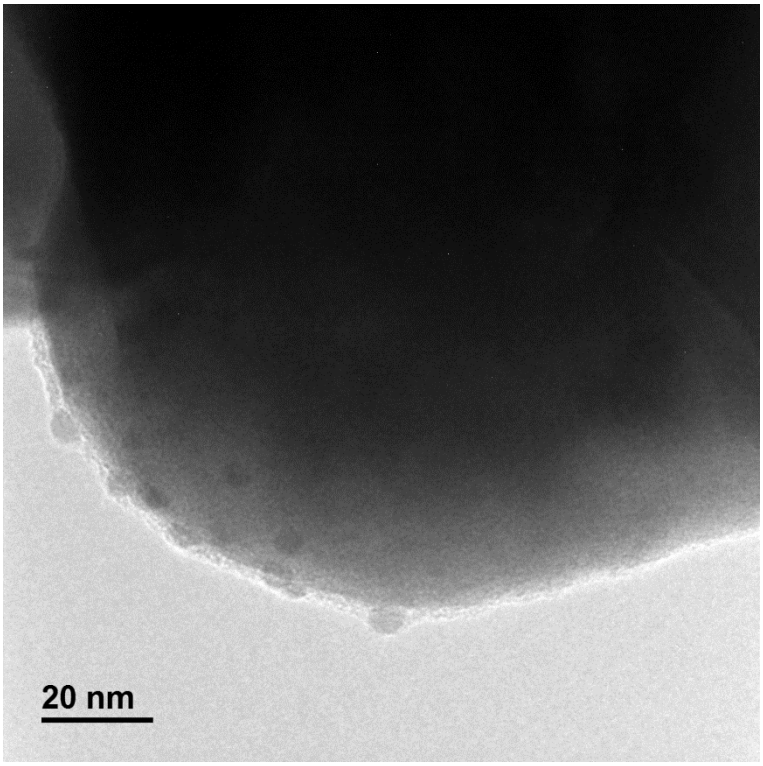

Figure S7 TEM analysis of Ag/LSCF$_{com}$-SP film after catalytic testing, taken at the centre of the LSCF layers.