Supplementary Materials: The Mechanism of Joint Reduction of MoO_3 and CuO by Combined Mg/C Reducer at High Heating Rates

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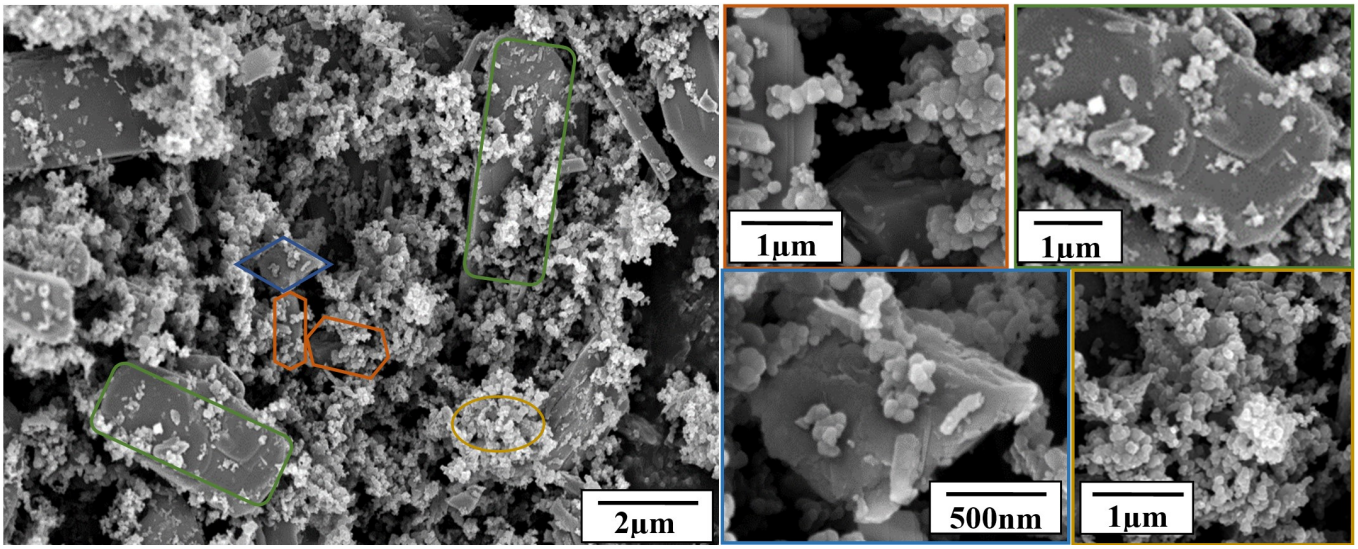


Figure S1. SEM analysis of the initial quaternary CuO + MoO_3 + 1.2Mg + 2.15C mixture.

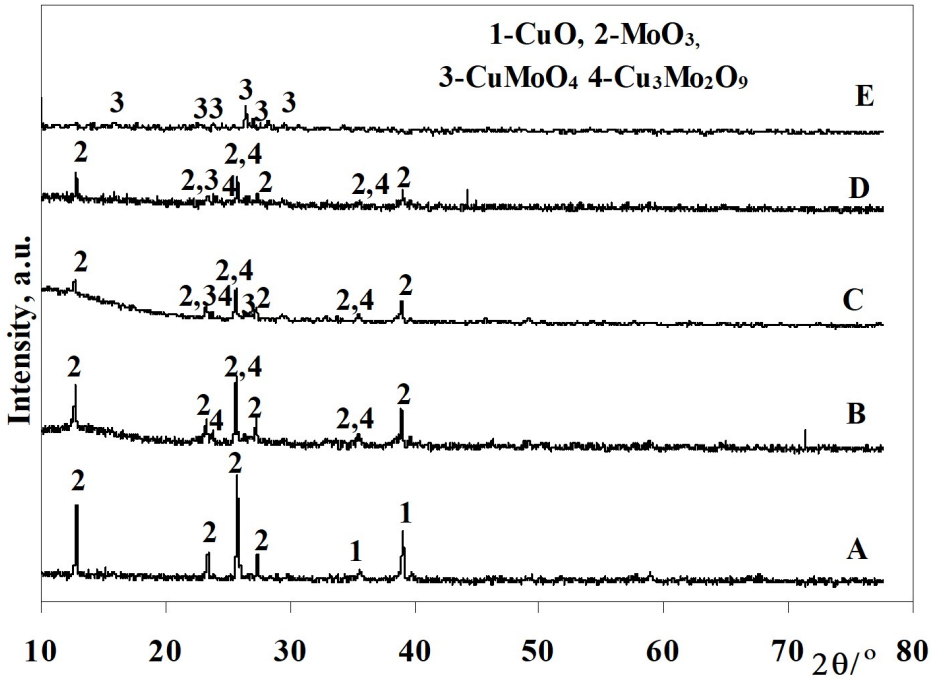


Figure S2. XRD patterns of the CuO+MoO_3 mixture; A – T = 773, B - 923, C - 1023, D - 1073, E - 1073 (t_h = 10 min) K, V_h = 300 K min^{-1}.

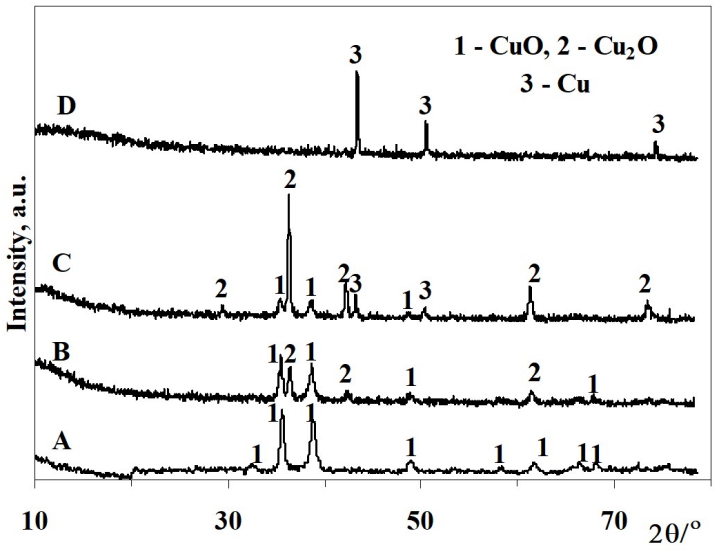


Figure S3. XRD patterns of the CuO+C mixture; A – T = 773, B - 873, C - 973, D - 1153 K, V_h = 300 K min^{-1}.

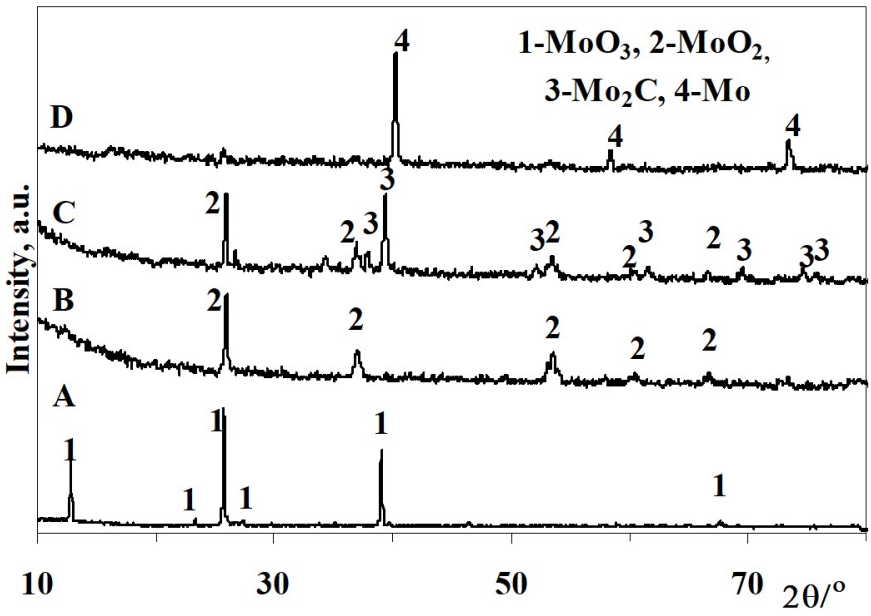


Figure S4. XRD patterns of the MoO_3 + 2C mixture; A - T=893, B - 1063, C - 1373, D - 1573 K, V_h = 300 K min^{-1}.

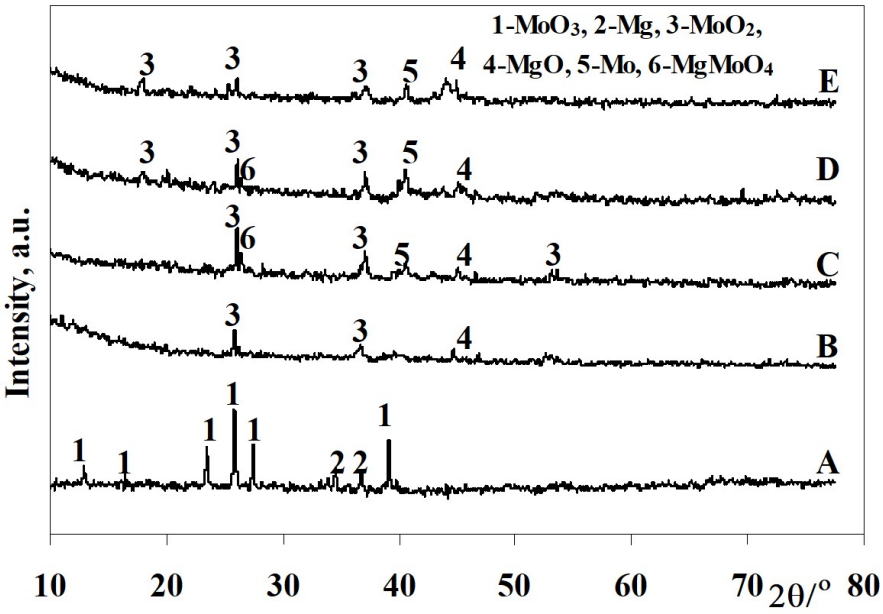


Figure S5. XRD patterns of the MoO_3+3Mg mixture; A – T = 923, B - 1048, C - 1203, D - 1323, E - 1573 K, V_h = 300 K min^{-1}.

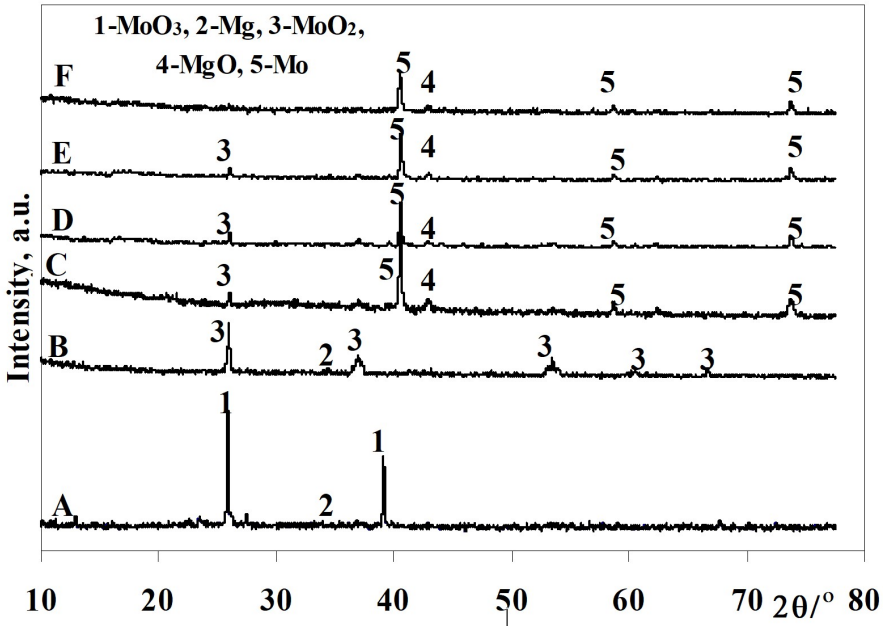


Figure S6. XRD patterns of the MoO_3 + 1.5Mg + C mixture; A - T = 923, B - 1073, C - 1153, D - 1273, E - 1423, F - 1573 K, V_h = 300 K min^{-1}.

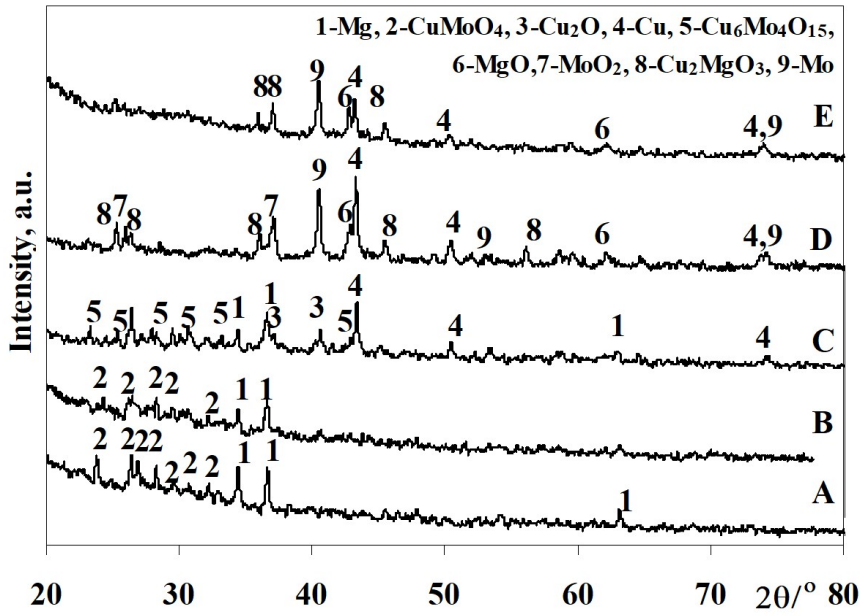


Figure S7. XRD patterns of the $CuMoO_4$ + 4Mg mixture; A – T = 923, B - 1123, C - 1323, D - 1413, E - 1573 K, V_h = 300 K min^{-1}.

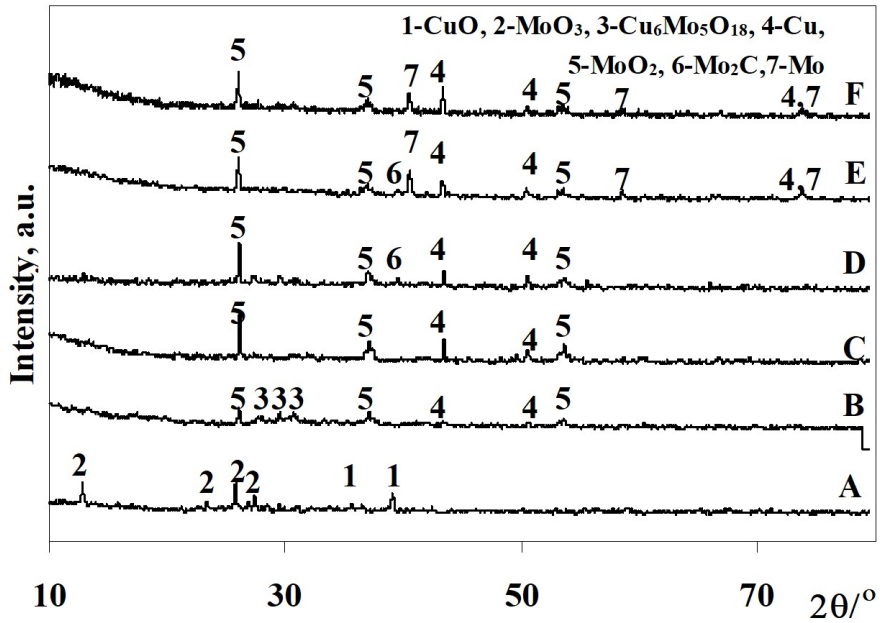


Figure S8. XRD patterns of the CuO + MoO_3 + 3C mixture; A – T = 803, B - 913, C - 1023, D - 1273 E - 1393, F - 1573 K, V_h = 300 K min^{-1}.

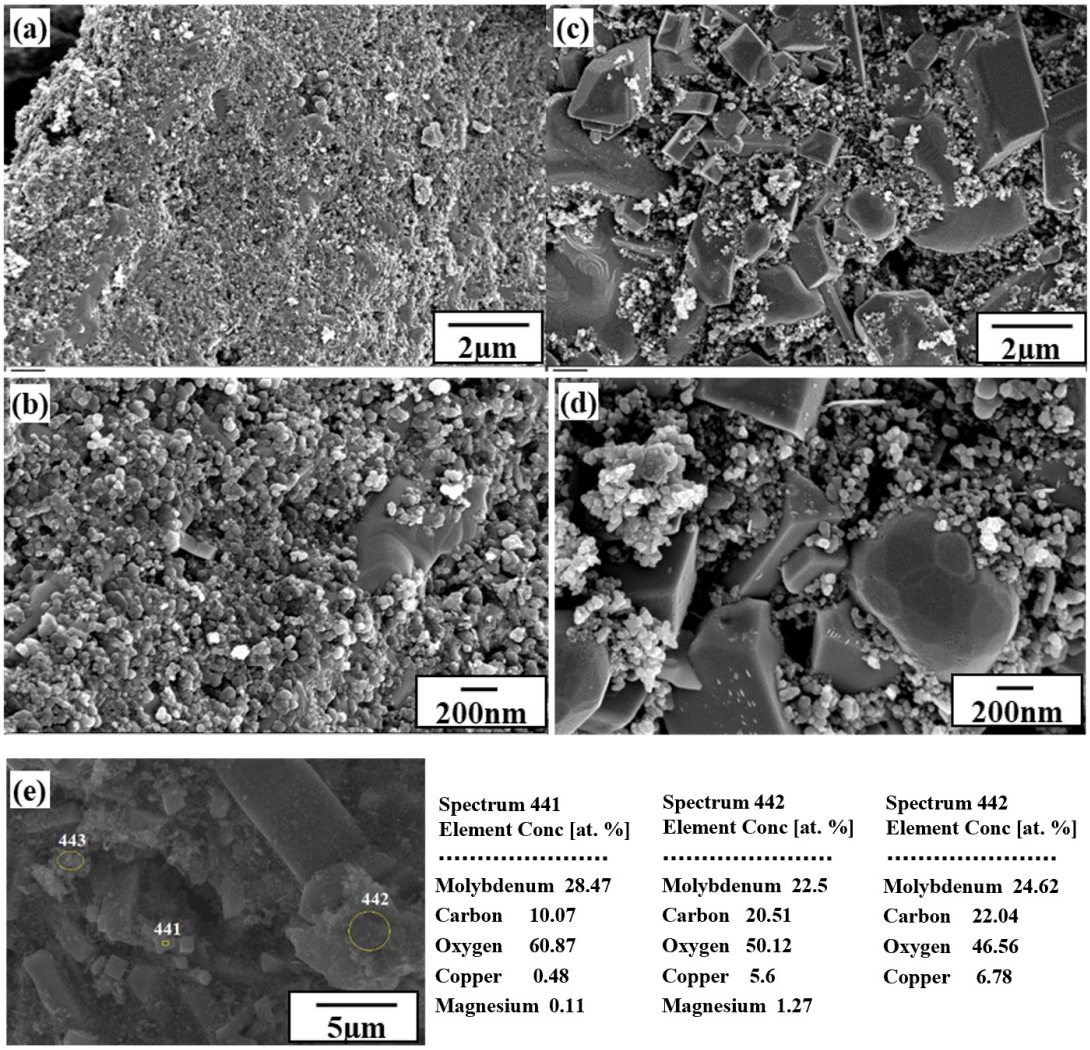
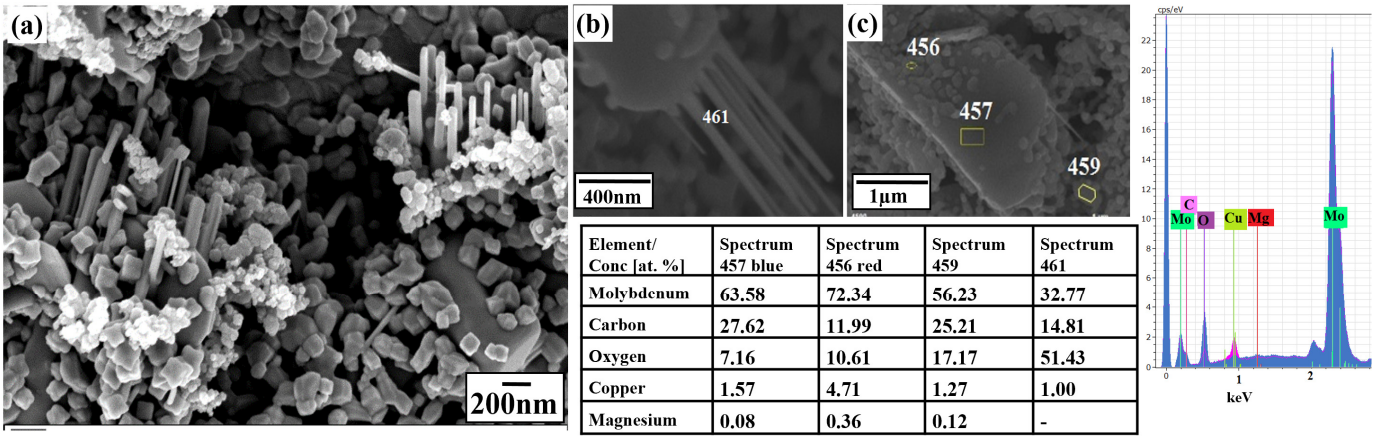


Figure S9. SEM/EDS analyses of the quenched sample at 1023 K (a, c) and 1163 K (b, d, e).



Element/ Conc [at. %]	Spectrum 457 blue	Spectrum 456 red	Spectrum 459	Spectrum 461
Molybdenum	63.58	72.34	56.23	32.77
Carbon	27.62	11.99	25.21	14.81
Oxygen	7.16	10.61	17.17	51.43
Copper	1.57	4.71	1.27	1.00
Magnesium	0.08	0.36	0.12	-

Figure S10. SEM/EDS analyses of the quenched sample at 1573 K (a, b, c).