Electronic Supplementary Material (ESI) for Catalysis Science & Technology.

The oxidative esterification of ethylene glycol in methanol to methyl glycolate over supported Au catalysts

Yi-Hu Ke, Xiao-Xia Qin, Chun-Ling Liu, Rong-Zhen Yang, Wen-Sheng Dong*

Key Laboratory of Applied Surface and Colloid Chemistry (SNNU), MOE, School of Chemistry and Chemical Engineering, Shaanxi Normal University, Xi'an, 710062, China

* To whom correspondence should be addressed. E-mail: wsdong@snnu.edu.cn

Supporting information

Table s1 Catalytic performance of Au/Al_2O_3 catalysts with varying mean Au particle sizes[a]

Catalysts	Au loading (wt %)	Mean Au size (nm)	Au dispersion (%)	EG conversion (%)	MGC selectivity (%)	TOF[b] (s^{-1})
$Au(2.0)/Al_2O_3$	1.32	2.0	58.5	10.2	91.8	0.133
$Au(3.0)/Al_2O_3$	1.35	3.0	39.0	12.5	92.3	0.239
$Au(5.0)/Al_2O_3$	1.36	5.0	23.4	6.7	92.6	0.212
$Au(7.6)/Al_2O_3$	1.34	7.6	15.4	4.5	91.3	0.219

a: Reaction conditions: catalyst 0.9 g, methanol 17.4 g, EG =3.43g, 3.0 MPa, 100 ^{o}C, 20 min.
b: The moles of converted ethylene glycol per mole of surface gold atoms per second.

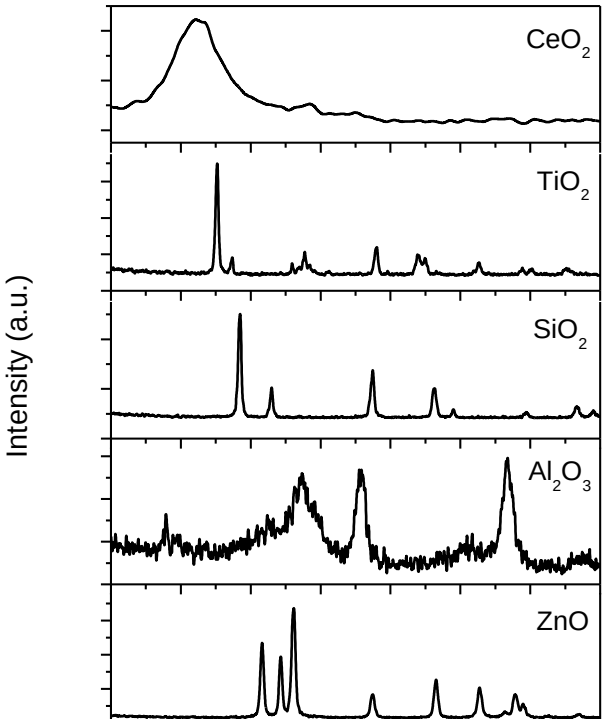

Figure s1. XRD patterns of various supports

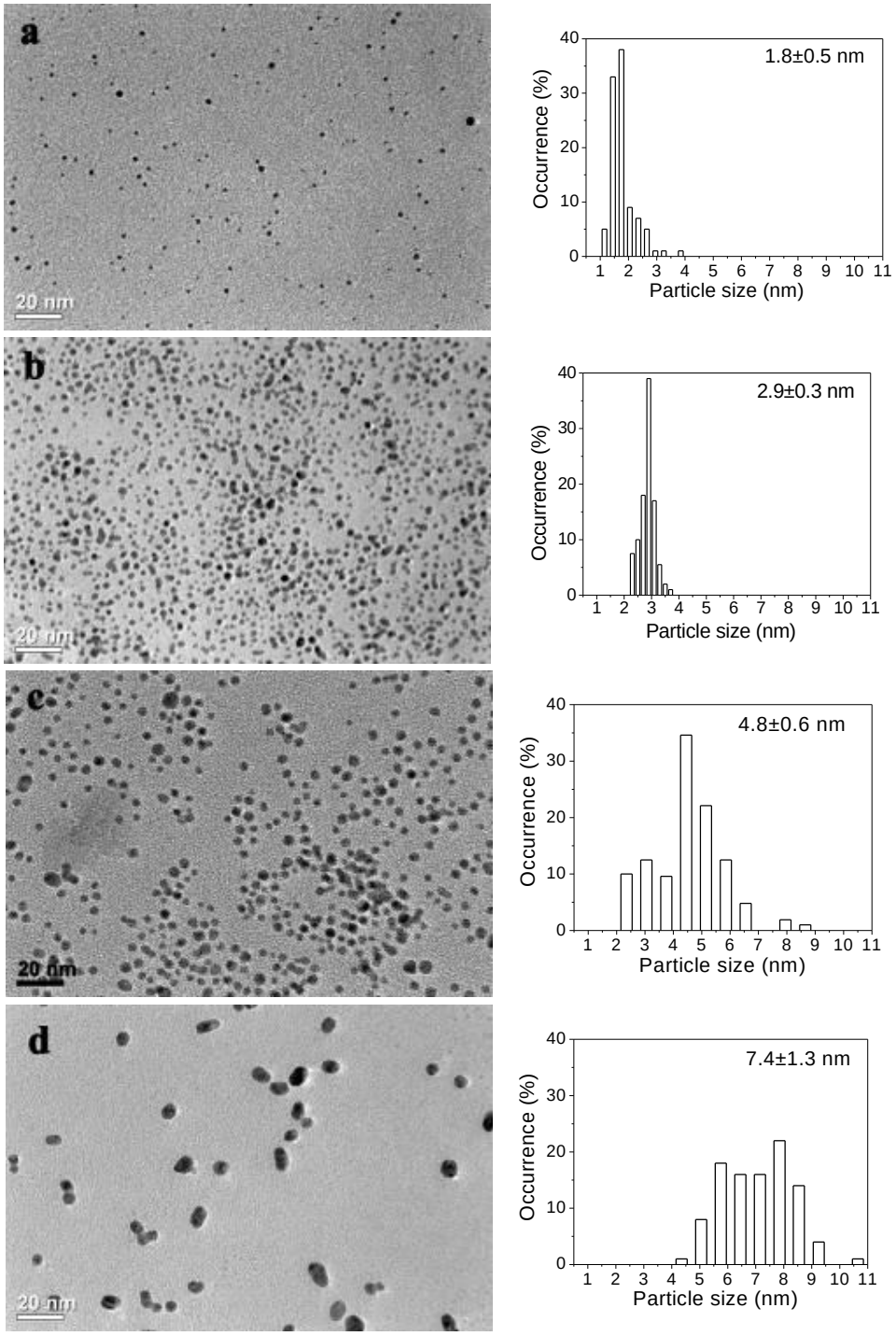

Figure s2. TEM micrographs and corresponding Au particles size distributions of Au sols prepared at different temperatures: a) 0; b) 25; c) 60; d) 90^{o}C.

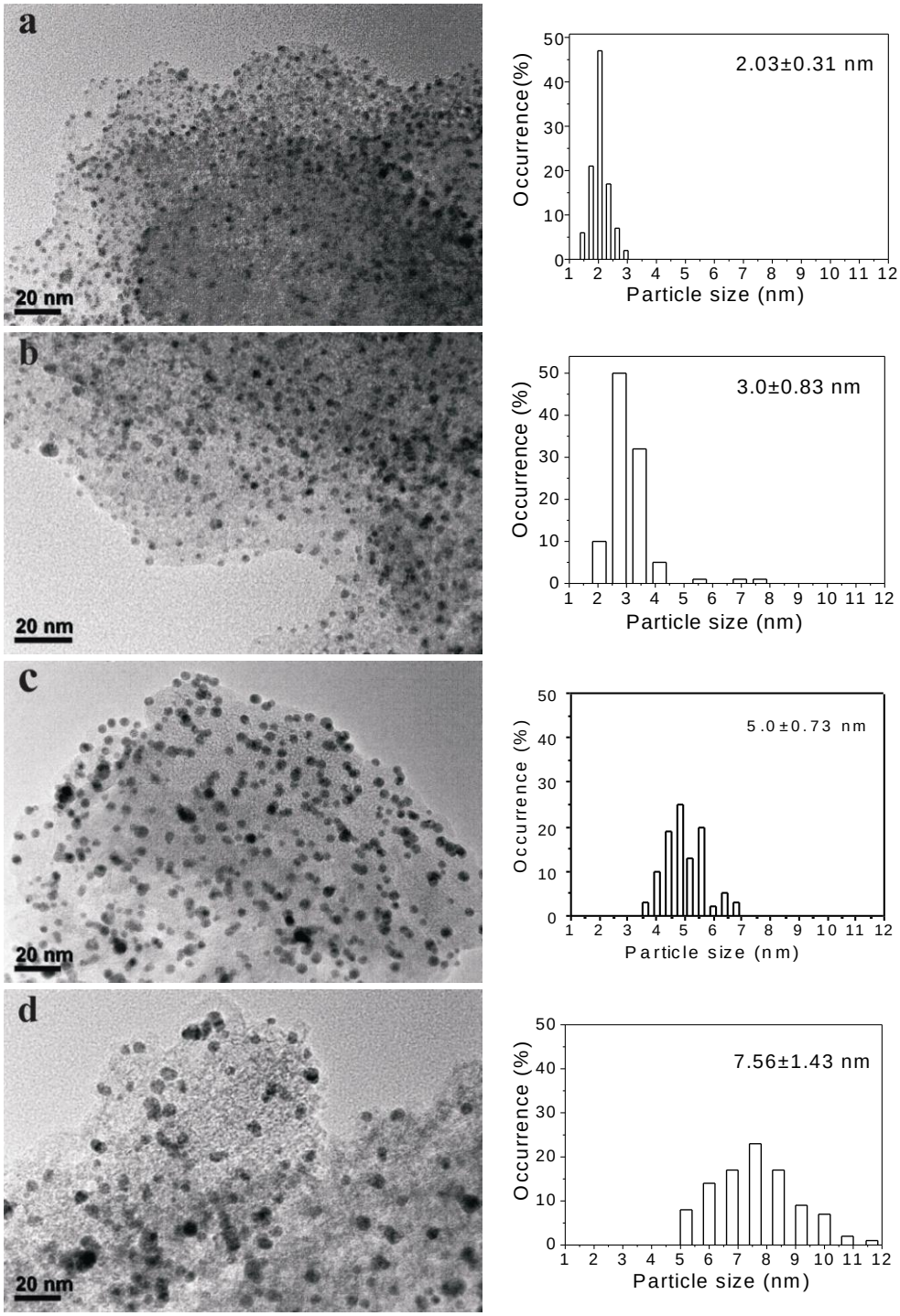

Figure s3. TEM micrographs and corresponding Au particles size distributions for Au/Al_2O_3 catalysts: a) $Au(2.0)/Al_2O_3$; b) $Au(3.0)/Al_2O_3$; c) $Au(5.0)/Al_2O_3$; d) $Au(7.6)/Al_2O_3$.

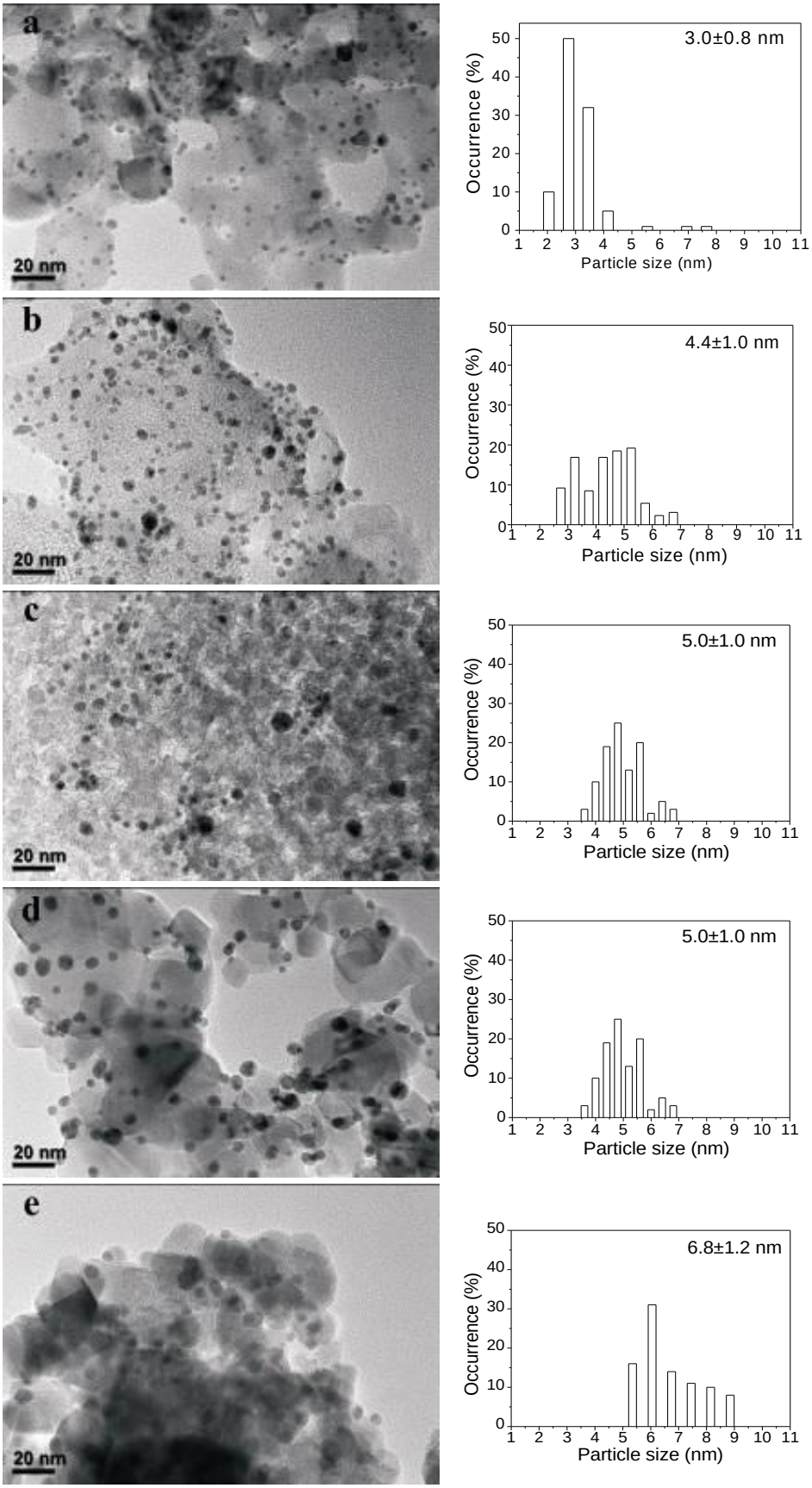

Figure s4. TEM micrographs and corresponding Au particles size distributions for the used Au catalysts: a) Au(2.9)/ZnO; b) Au/Al_2O_3; c) Au/SiO_2; d) Au/TiO_2; e) Au/CeO_2.