**PREPARATION OF CARBON-SUPPORTED TERNARY NANOCATALYST PALLADIUM-VANADIUM-COBALT FOR ALCOHOL ELECTROOXIDATION**

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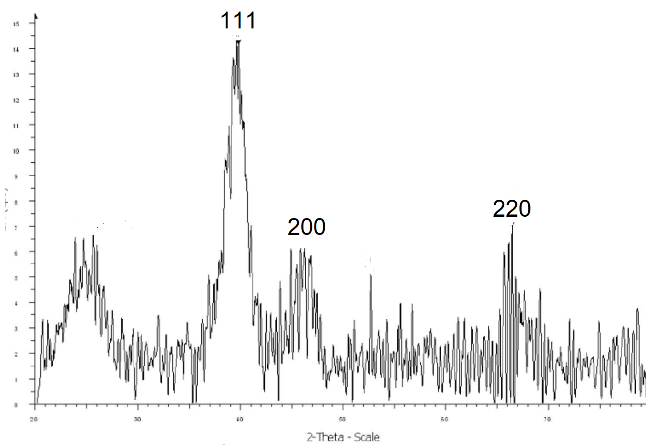
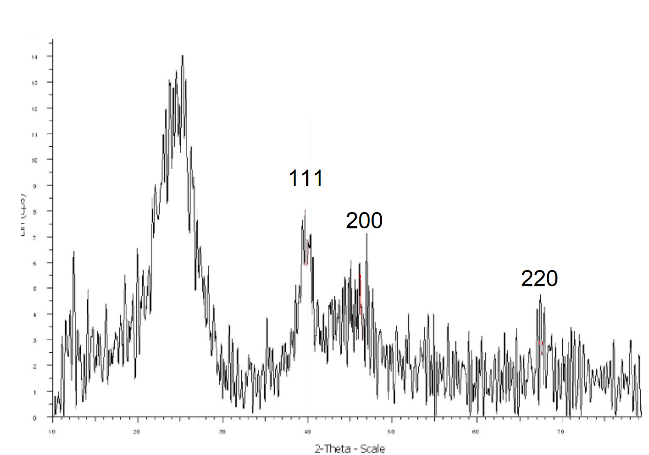
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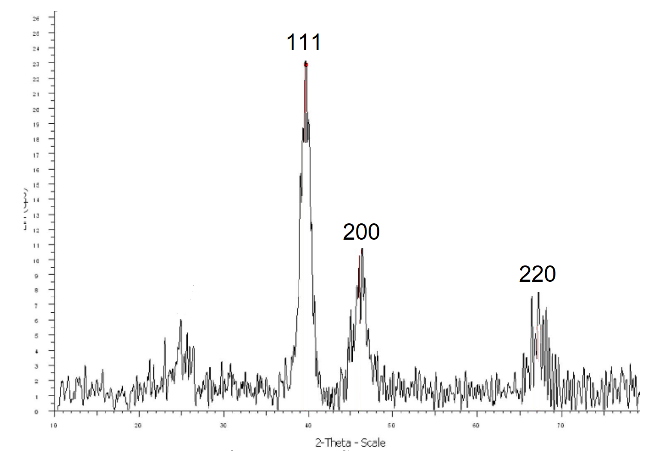
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***SUPPORTING INFORMATION***



(b)

(a)



(c)

Figure S1 XRD patterns of nano catalyst (a) PdVCo-15EG; (b) PdVCo-20EG and

(c) PdVCo-15EG-20NaBH4.

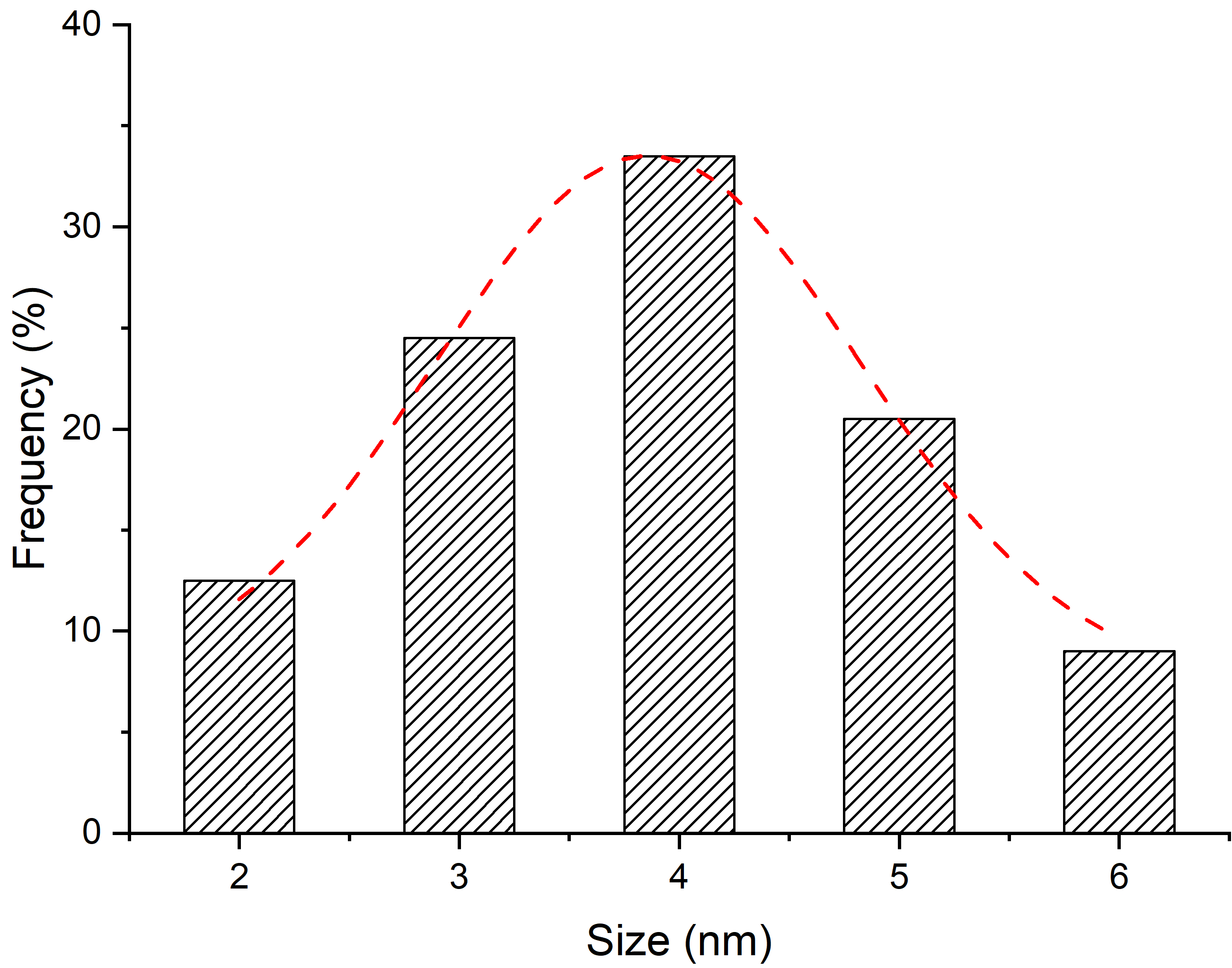
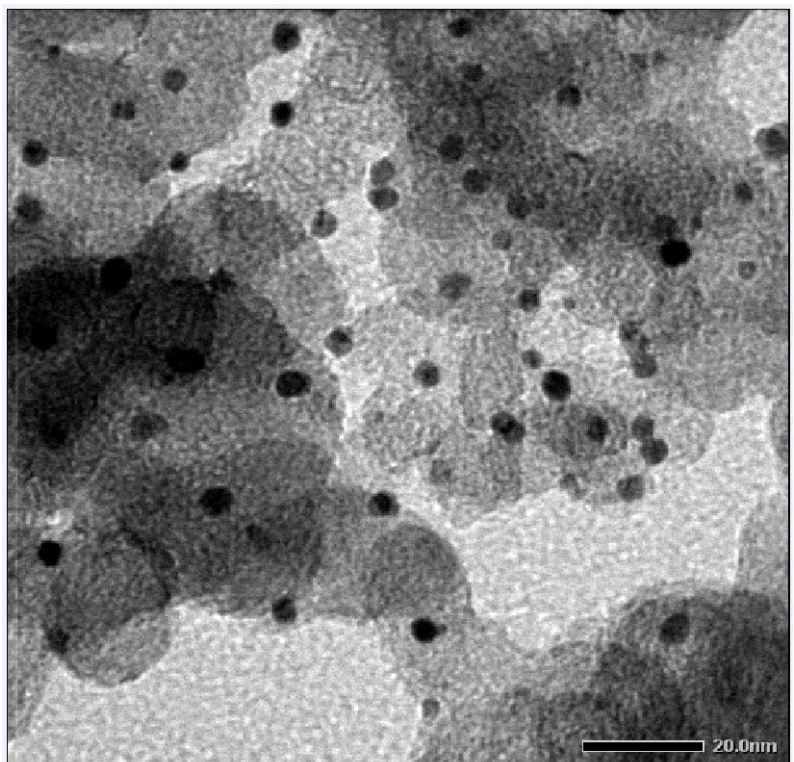
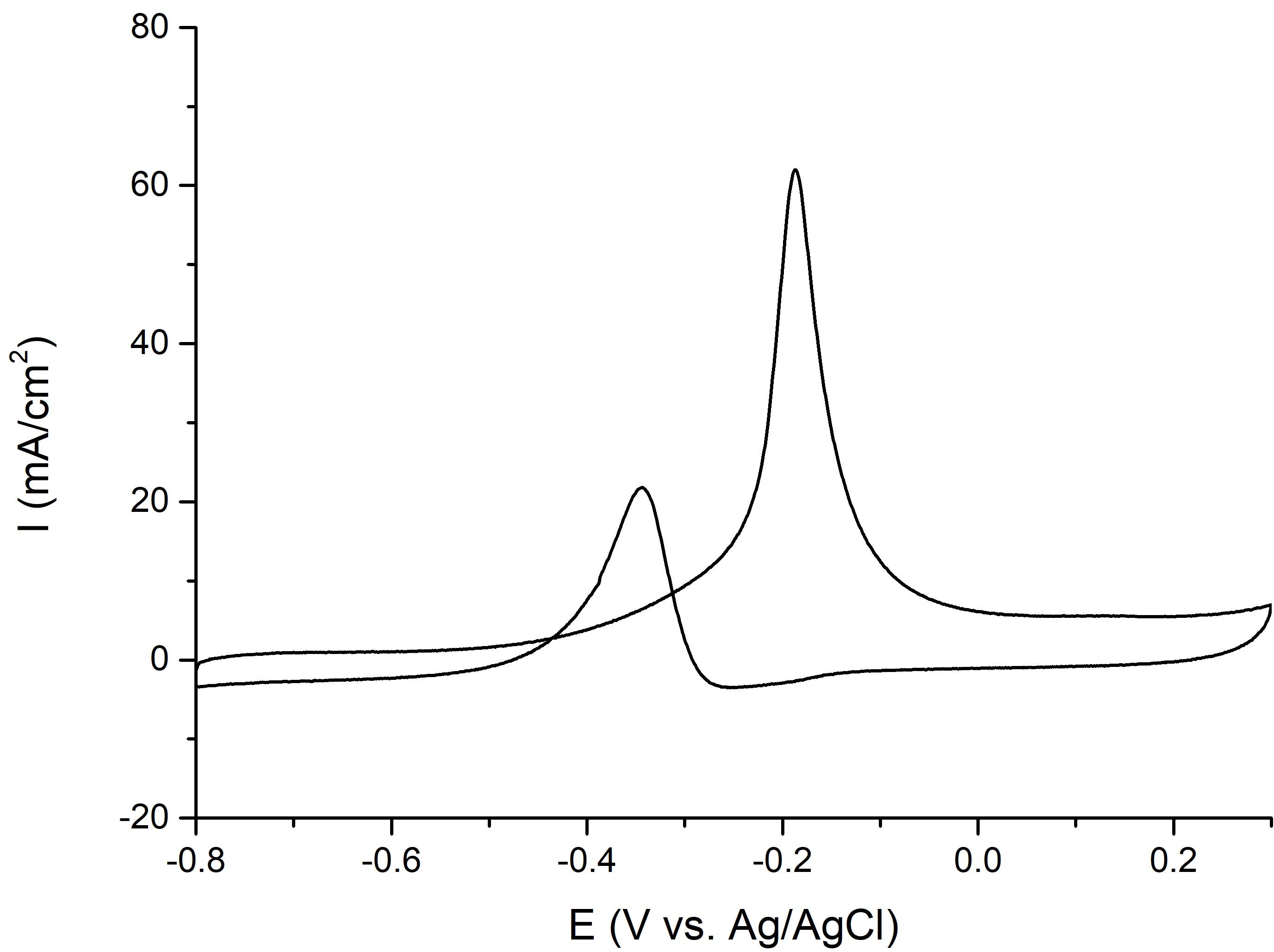
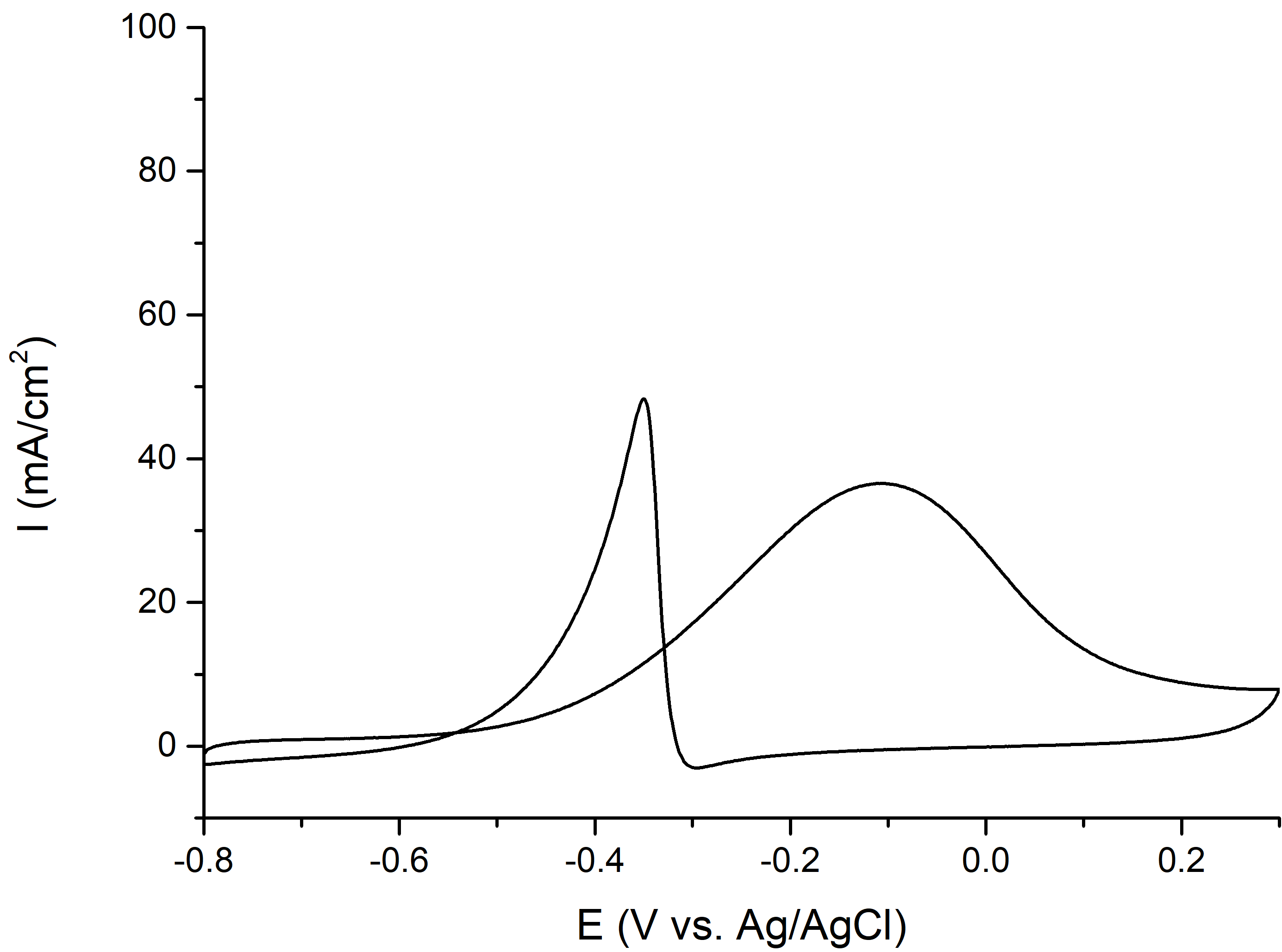


Figure S2 TEM and images and particle size distribution of sample Pd-20EG-20NaBH4.

(b)

(a)

Figure S3 CVs of on nanocatalysts Pd-20EG-NaBH4 in a solution of:

(a) 1 M KOH + 1 M CH3OH (If/Ib = 2.60) and (b) 1 M KOH + 1 M C2H5OH (If/Ib = 0.63).

Table S1 Average crystallite size of nanocatalysts

|  |  |  |
| --- | --- | --- |
|  | Lattice parameter / Å | Crystallite size / nm |
| Pd-20EG-20NaBH4 | 3.8971 | 4.69 |
| PdVCo-15EG | 3.8867 | 6.95 |
| PdVCo-20EG | 3.8814 | 5.62 |
| PdVCo-15EG-20NaBH4 | 3.8761 | 6.67 |
| PdVCo-20EG-20NaBH4 | 3.8618 | 5.66 |

Table S2 Onset potential (V vs. Ag/AgCl) of nanocatalysts in a solution of

1 M KOH + 1 M CH3OH and 1 M KOH + 1 M C2H5OH

|  |  |  |
| --- | --- | --- |
|  | CH3OH | C2H5OH |
| Pd-20EG-20NaBH4 | -0.45 V | -0.50 V |
| PdVCo-15EG | -0.62 V | -0.54 V |
| PdVCo-20EG | -0.62 V | -0.54 V |
| PdVCo-15EG-20NaBH4 | -0.61 V | -0.54 V |
| PdVCo-20EG-20NaBH4 | -0.61 V | -0.54 V |