Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Silver Induced Electronic Drift in AgPd Bimetallics: Rationale for Enhanced Electrocatalytic Activity of Ethanol Oxidation Reaction

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S1. Chemicals Used:

All chemicals used are of analytical grade. Distilled water is used throughout the process. Glass-ware were washed thoroughly using aqua regia and then with copious amount of water.

S2. Instrumentation:

Powder X-Ray diffraction (XRD) was recorded with a Philips PW-1710 X-ray diffractometer (40kV, 20 mA) using Cu Kα radiation ((λ = 1.5418 Å) in the range of 5°-90° at a scanning rate of 0.5° min^{-1}. For analysing the XRD data, JCPDS software guided us.

Surface morphology was analysed using field emission scanning electron microscopy (FESEM) with a supra, Carl Zeiss Pvt. Ltd. Elemental detection of material was done with an energy dispersive X-ray microanalyser (OXFORD ISI 3000 EDAX) attached to the scanning electron microscopy.

For gaining further information in structural analysis, transmission electron microscopy (TEM) analysis was done with the help of Hitachi H-9000 NAR transmission electron microscope, using accelerating voltage at 200 kV.

UV-visible spectral analyses were done using SPECTRASCAN UV 2600 digital spectrophotometer (Chemito, INDIA).

S1. TEM images of Ag nanoparticles.

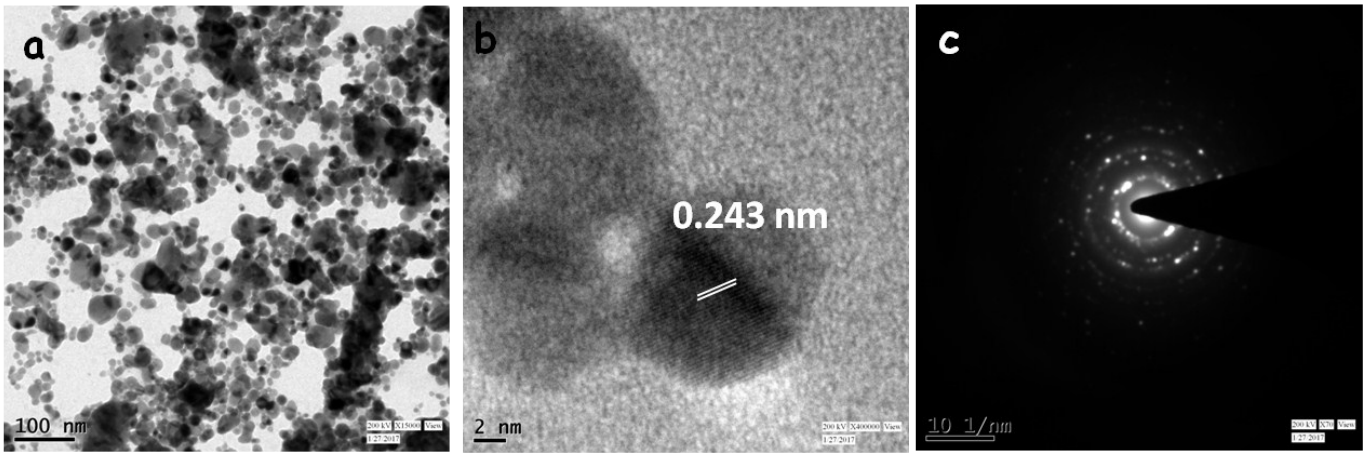

Figure S1: (a) TEM image, (b) Fringe spacing of 0.243 nm denotes the presence of Ag_{111} plane and (c) SEAD pattern shows the polycrystalline nature observed in sacrificial Ag nanoparticles.

S2. EDS analysis of representative sets of Ag/Pd catalysts.

Table S1: EDS analysis of Ag and Pd composition in representative sets of AgPd				
Sample code	**Ag**		**Pd**	
	Weight %	**Atomic %**	**Weight %**	**Atomic %**
AgPd A	72.26	71.98	27.74	28.02
AgPd B	64.83	64.52	35.17	35.48
AgPd C	50.16	49.82	49.84	50.18

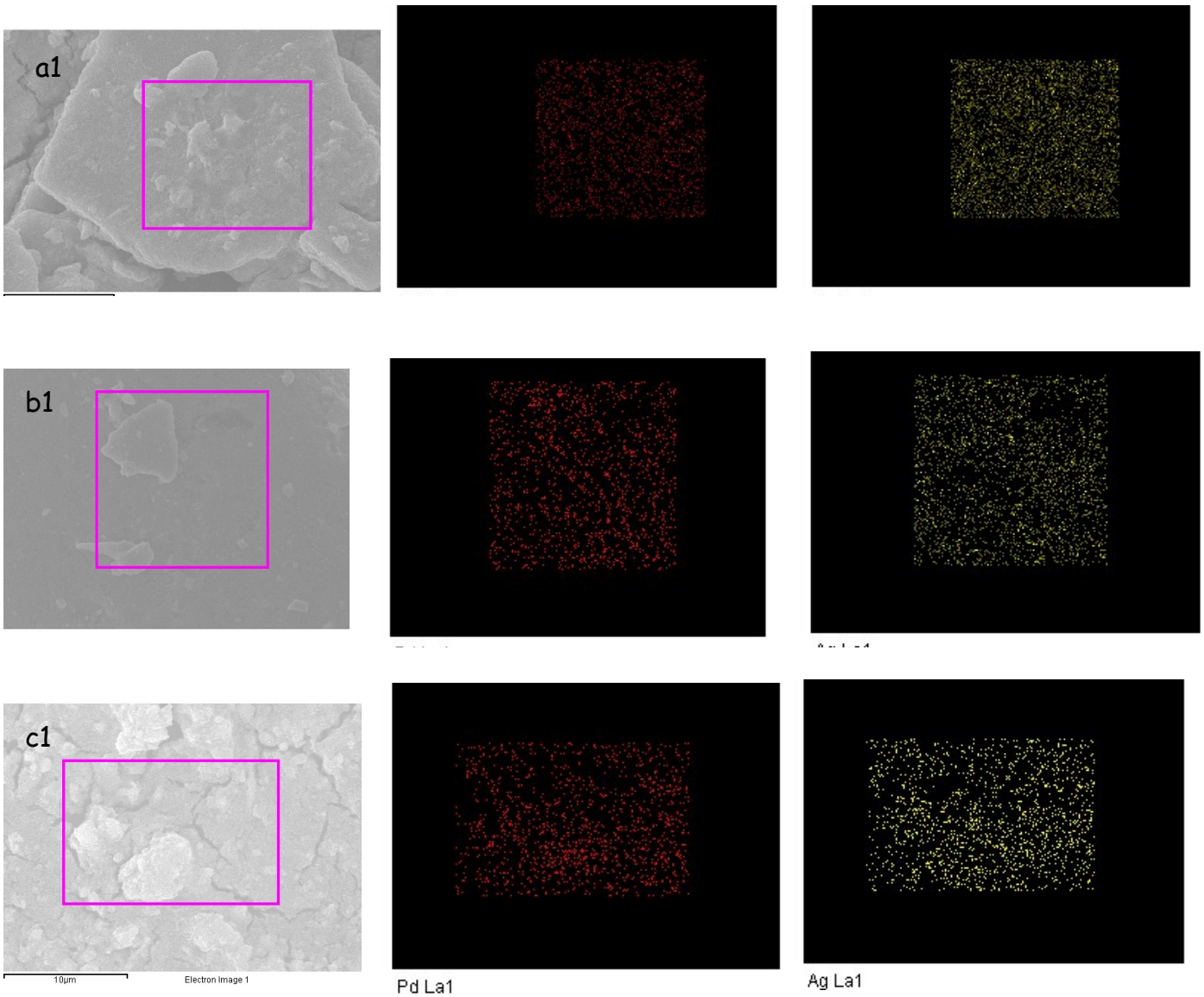

Figure S2: EDS mapping of representative sets AgPd A (a1), B (b1) and C (c1), where red and yellow denote homogeneous distribution of Pd and Ag respectively.

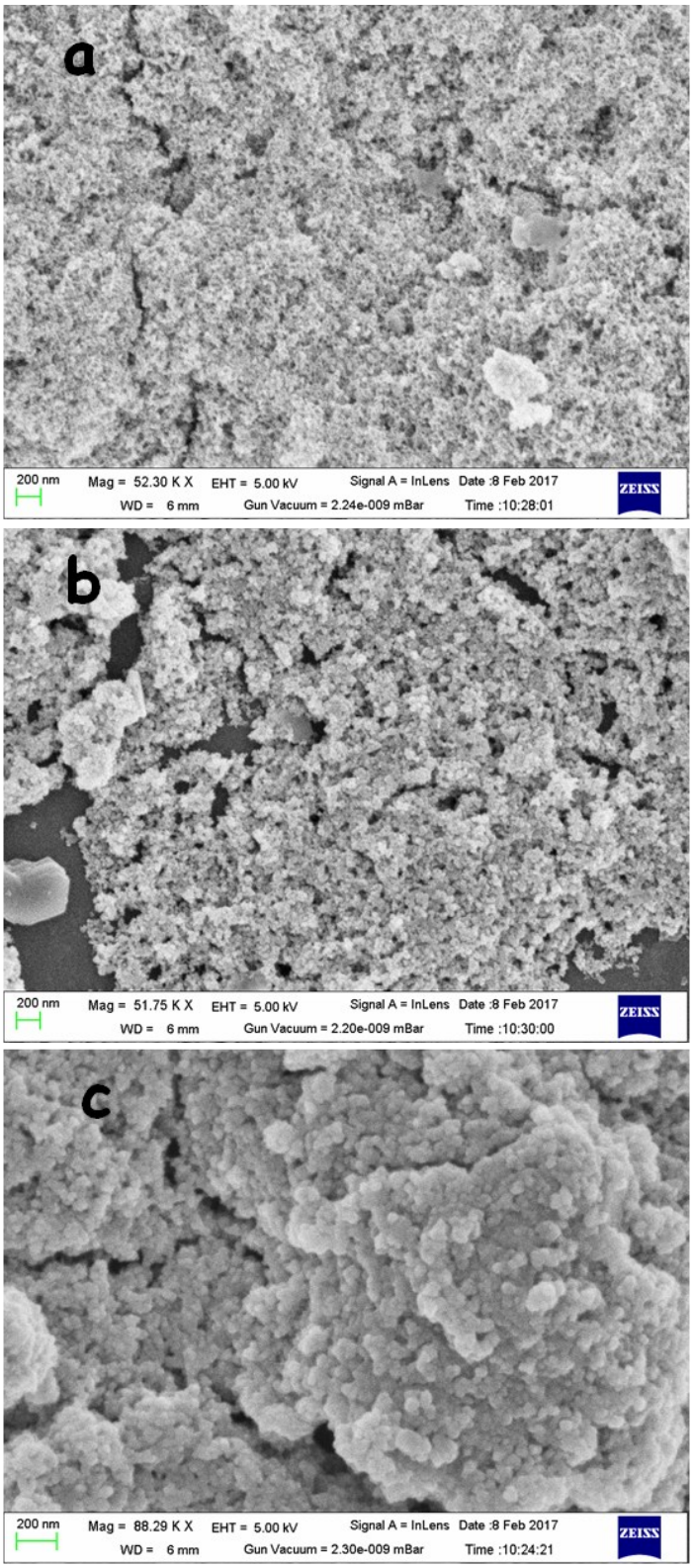

Figure S3: FESEM images of AgPd A (a), B (b) and C (c) at magnification of 200 nm.

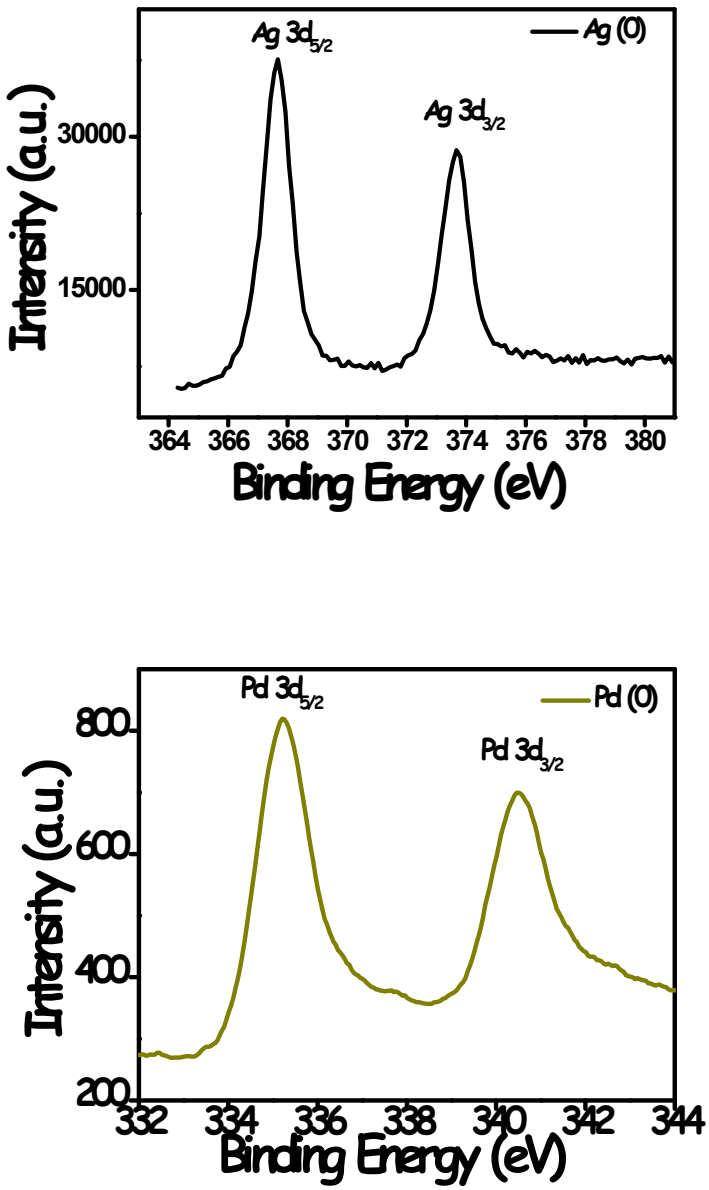

Figure S4: XPS of Ag and Pd prepared separately considering similar condition.

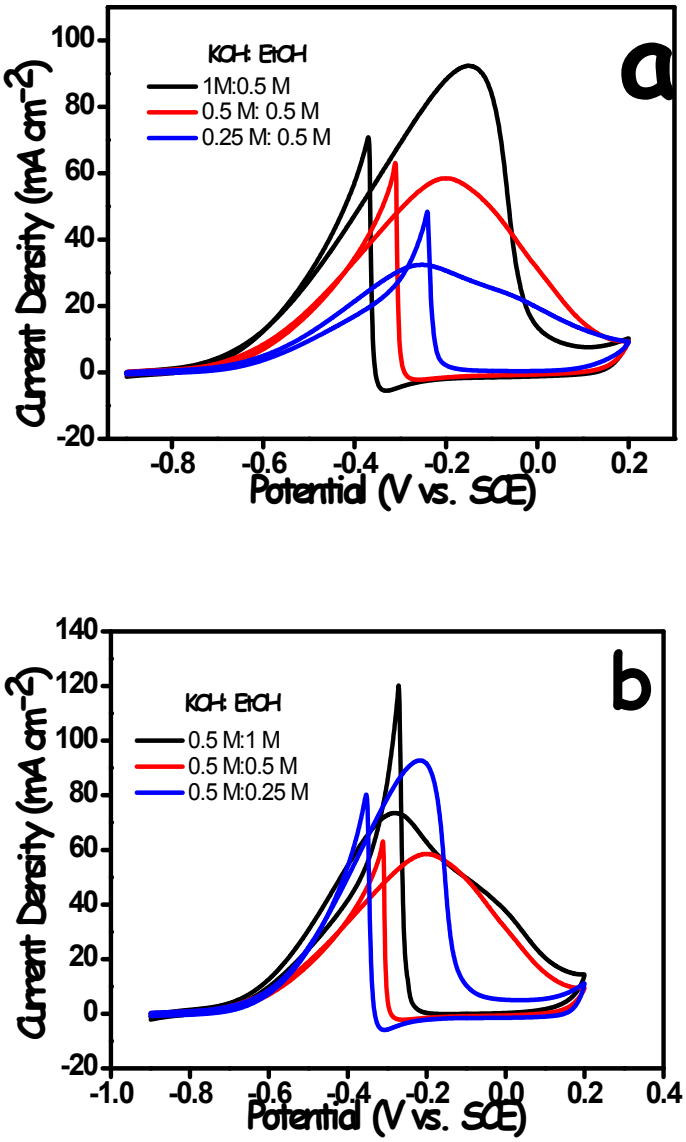

Figure S5: Cyclic voltammograms elaborating the results of (a) KOH variation; (b) EtOH variation using AgPd C as catalyst.

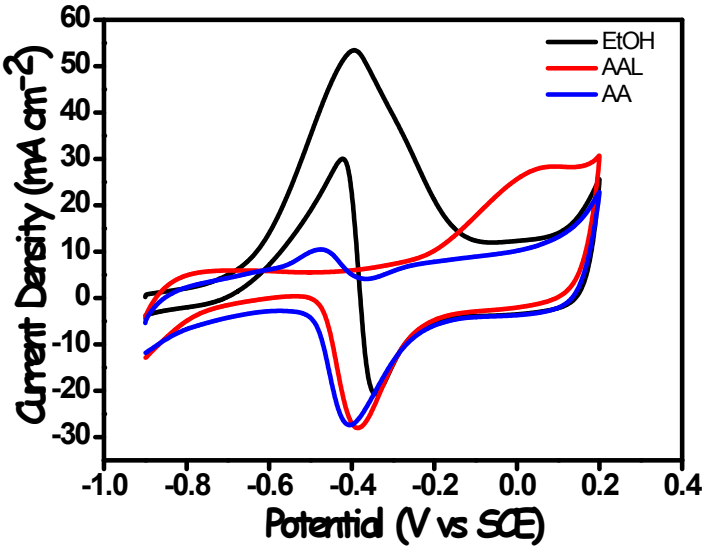

Figure S6: Comparison of cyclic voltammograms of AgPd C for the oxidation of ethanol (EtOH; 0.5 M), acetaldehyde (AAL; 0.5 M) and acetic acid (AA; 0.5 M) in 0.5 M KOH solution.

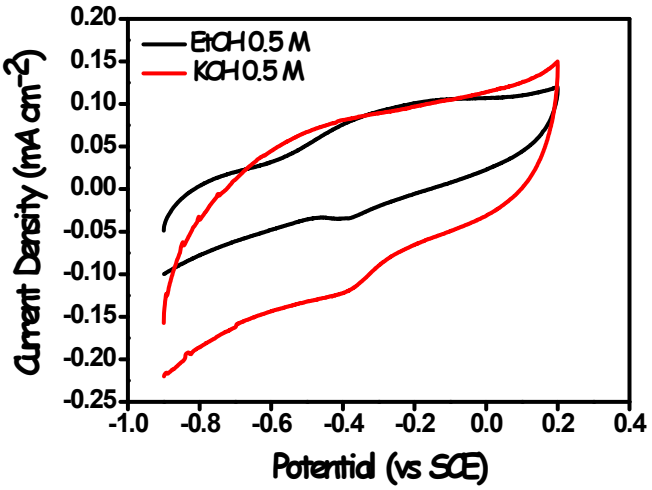

Figure S7: Comparison of cyclic voltammograms of Ag for the oxidation of ethanol (EtOH; 0.5 M) and in 0.5 M KOH solution.