Table S1. Theoretical and experimental Raman active modes for β-$AgVO_3$ structure.

Modes	Theor.*	Exp.*	Previous Exp. Reults **		
			Tian *et al*. 2005 (39)	Bao *et al*. 2007 (14)	Song *et al*. 2009 (41)
A'	161.79	161.9			
A'	220.47	226.72			
A"	249.79	246.86		248 cm^{-1}	249 cm^{-1}
A'	270.97	272.54			
A"	322.97	334.29			340 cm^{-1}
A'	354.43			342 cm^{-1} (Asymmetric deformation modes of the VO_4^{3-} tetrahedron)	
A'	373.95	383.13		390 cm^{-1} (Symmetric deformation modes of the VO_4^{3-} tetrahedron)	390 cm^{-1}
A'	443.47	442.08			
A'	476.86		471 cm^{-1} (Symmetric stretches in the V-O-V bond)		
A'	520.30	514.58		517 cm^{-1} (Asymmetric stretches in the V-O-V bond)	517 cm^{-1} (Asymmetric stretches in the V-O-V bond)
A"	686.44	678.52			-
A'	728.71	731.88	742 cm^{-1} (Asymmetric stretches in the V-O-V bond)	732 cm^{-1} (Asymmetric stretches in the V-O-V bond)	732 cm^{-1} (Asymmetric stretches in the V-O-V bond)
A'	829.07	804.52	806 cm^{-1} (bridging Ag-O-Ag bond)	808 cm^{-1} (Bridging Ag-O-Ag band)	808 cm^{-1} (Bridging Ag-O-Ag)
A'	869.76	845.26			845 cm^{-1} (Stretching vibrations of VO_3 groups in the $(V_2O_7)^{4-}$)
A'	882.29	884.42	891 cm^{-1} (Bridging V-O-Ag or O-V-O vibrations)	886 cm^{-1} (Bridging V-O-Ag or O-V-O vibrations)	887 cm^{-1} (Bridging V-O-Ag or O-V-O vibrations)
A'	984.55	947.46	963 cm^{-1} (Symmetric stretching of VO_4)		-

Continuation of **Table S1**

Modes	Theor.*	Exp.*	Previous Exp. Results **		
			Holtz *et al.* 2012 (38)	Liang *et al*. 2013 (9)	Zhao et al. 2015 (10)
A'	161.79	161.9		152 cm^{-1}	
A'	220.47	226.72			
A"	249.79	246.86	245 cm^{-1} (Symmetric bending of VO_4)	249 cm^{-1}	251 cm^{-1}
A'	270.97	272.54			
A"	322.97	334.29		337 cm^{-1}	
A'	354.43		341 cm^{-1} (VO_4 deformations)		335 cm^{-1} (Asymmetric deformation modes of the VO_4^{3-} tetrahedron)
A'	373.95	383.13	394 cm^{-1} (VO_4 deformations)	392 cm^{-1}	386 cm^{-1} (Asymmetric deformation modes of the VO_4^{3-} tetrahedron)
A'	443.47	442.08			
A'	476.86				
A'	520.30	514.58		517 cm^{-1} (Asymmetric stretches in the V-O-V bond)	
A"	686.44	678.52		-	
A'	728.71	731.88		730 cm^{-1} (Asymmetric stretches in the V-O-V bond)	733 cm^{-1} (Asymmetric stretches in the V-O-V bond)
A'	829.07	804.52		806 cm^{-1} (Bridging Ag-O-Ag band)	808 cm^{-1} (Bridging Ag-O-Ag band)
A'	869.76	845.26	850 cm^{-1} (V–O stretching vibration or Ag–O–V vibration)	845 cm^{-1} (Stretching vibrations of VO3 groups in the $(V2O7)^{4-}$)	
A'	882.29	884.42	887 cm^{-1} (Stretching vibration of V=O)	886 cm^{-1} (Bridging V-O-Ag or O-V-O vibrations)	886 cm^{-1} (Bridging V-O-Ag or O-V-O vibrations)
A'	984.55	947.46		956 cm^{-1} (Symmetric stretching of VO_4)	

(*) The theoretical Raman-active modes were calculated through the atomic positions and lattice parameters for the optimized β-$AgVO_3$ crystals using first-principles calculation, while the Experimental values were determined by Raman measurements of the powder β-AgVO3 powders synthesized by the CP route at 30, 60 and 90°C.

(**) The column Literature, lists the authors who have cited these modes.

Figure S1. TEM images before and after 5 min of exposure to the electron beam for β-$AgVO_3$ powders synthesized by the CP route at 90°C, illustrating the four regions (yellow circles) used in the chemical composition (1 and 2), and measurements of the interplanar distance (3 and 4), of β-$AgVO_3$ powders obtained by the CP method at 30°C (A) and 60°C (B).