Supplementary material

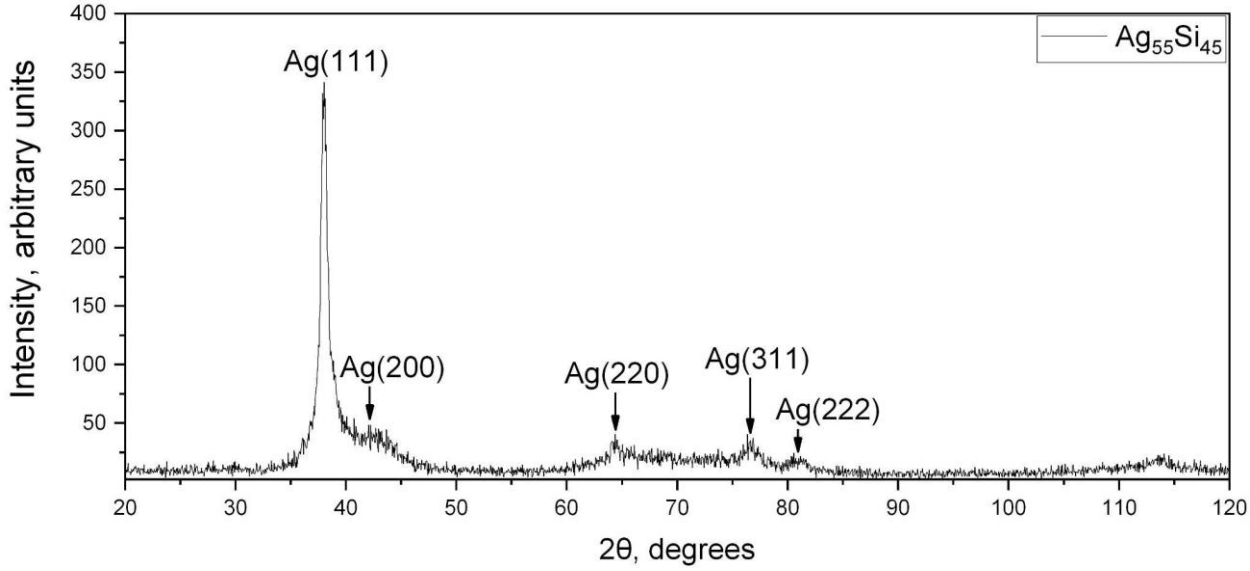

Fig. S1. . X-ray diffractogram of the $Ag_{55}Si_{45}$ film

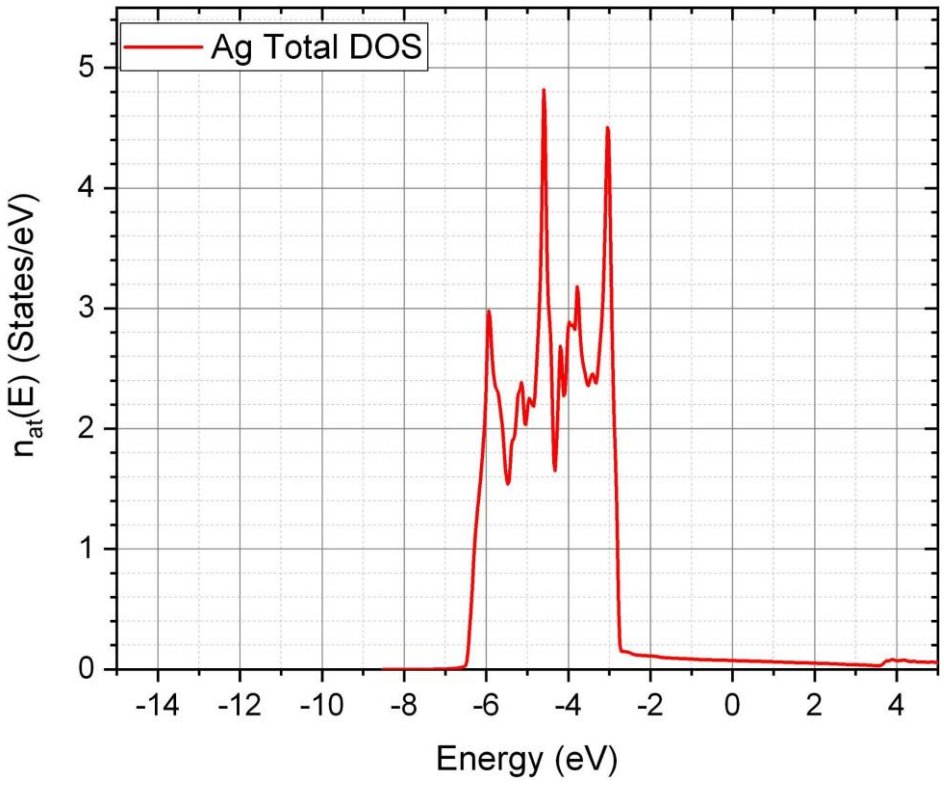

Fig. S2. Total densities of states for Ag atoms

Table TS1. Atom coordinates in $AgSi_3$ phase (*I*4/*mmm*, 139) [mp_978524 in Materials Project]

Phase	Site	Element	Wyckoff Symbol	X	Y	Z	Occupation
$AgSi_3$	Ag	Ag	2*a*	0	0	0	1
	$Si^{(1)}$	Si	4*d*	0	1/2	1/4	1
	$Si^{(2)}$	Si	2*b*	1/2	1/2	0	1

Table TS2. Atom coordinates in Ag_2Si phase (*Cmcm*, 63) [sd_0450926 in Springer Materials]

Phase	Site	Element	Wyckoff Symbol	X	Y	Z	Occupation
Ag_2Si	$Ag^{(1)}$	Ag	8*g*	0.25	0.42	1/4	1
	$Ag^{(2)}$	Ag	4*c*	0	0.17	1/4	1
	$Ag^{(3)}$	Ag	4*a*	0	0	0	1
	Si	Si	8*f*	0	0.33	0.56	1

Table TS3. Atom coordinates in Ag_3Si phase (*P*-6*m*2, 187) [mp_1219243 in Materials Project]

Phase	Site	Element	Wyckoff Symbol	X	Y	Z	Occupation
Ag_3Si	$Ag^{(1)}$	Ag	2*h*	1/3	2/3	0.74	1
	$Ag^{(2)}$	Ag	1*a*	0	0	0	1
	Si	Si	1*b*	0	0	1/2	1