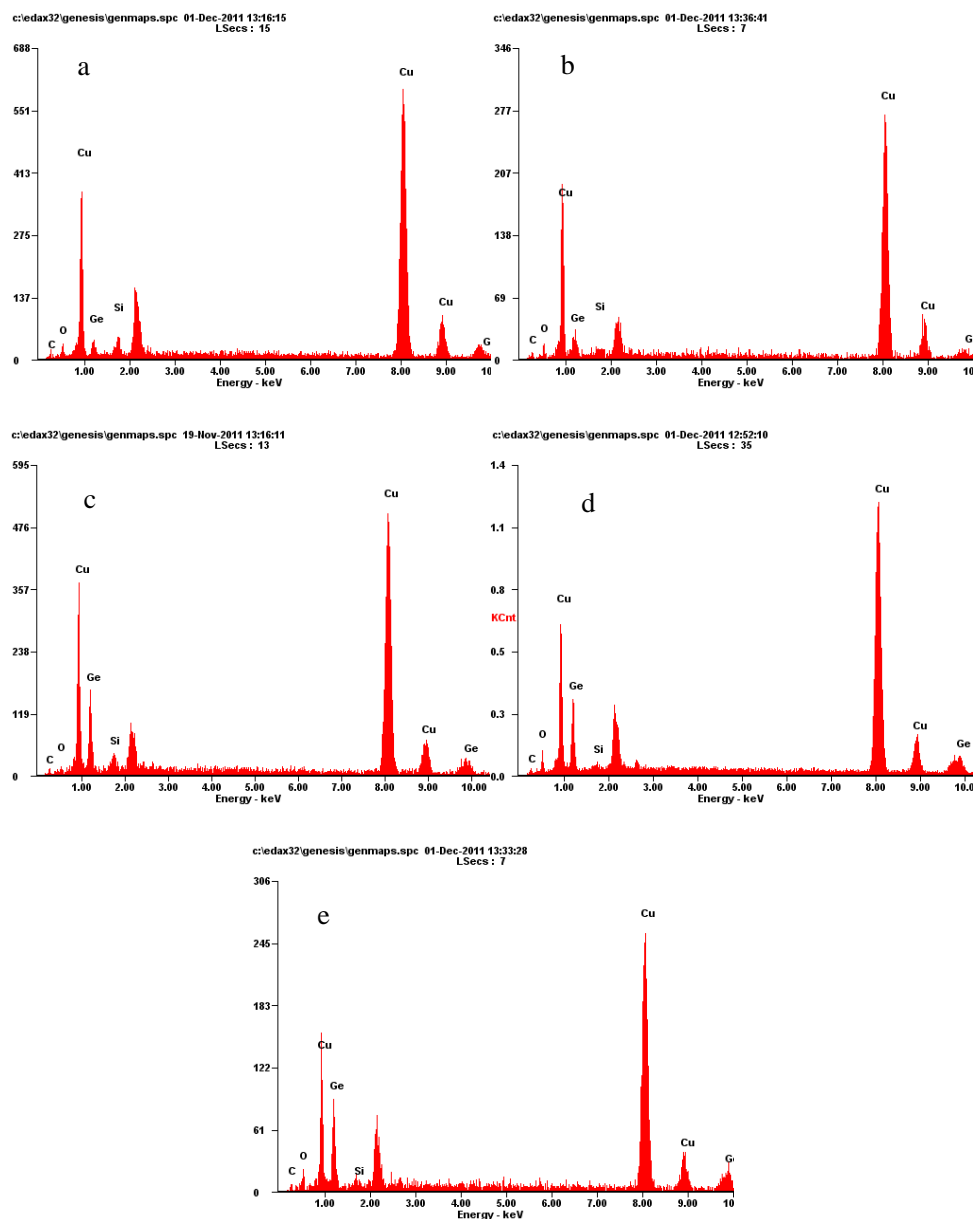


Fig. S1 EDX analysis of Cu substrate used for the electrodeposition of $\text{Si}_x\text{Ge}_{1-x}$ films.



These figures show the EDX analysis of $\text{Si}_x\text{Ge}_{1-x}$ films electrodeposited from the prepared electrolyte with different molar ratios of Si and Ge on Cu substrate at the potential of -1.9 V. Si:Ge = 4:1 (a), Si:Ge = 2:1 (b), Si:Ge = 1:1 (c), Si:Ge = 1:2 (d) and Si:Ge = 1:4 (e).