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Effect of Pd Concentration on the Structure and Physical Properties of $\text{Ag}_{100-x}\text{Pd}_x$ ($x = 40, 50, \text{ and } 60 \text{ at.}\%$) Alloys

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Experimental investigations have been carried out to study the effect of Pd on the structure and physical properties of binary $\text{Ag}_{100-x}\text{Pd}_x$ (at $x = 40, 50, 60 \text{ at.}\%$) alloys. X-ray diffraction (XRD) patterns showed that these alloys form a face-centered cubic structure of A1 type. No superlattice peaks were observed in the diffraction patterns. Differential scanning calorimetry experiments revealed no phase transition in a temperature range of 25–1100°C. Results show that the addition of Pd leads to an increase in the value of electrical resistivity, whereas Vickers hardness and ultimate tensile strength decrease by increasing the concentration of Pd in these alloys. The results have been discussed and compared with those given in literature.

Keywords: X-ray diffraction, phase transition, Vickers hardness, ultimate tensile strength.