

FEATURES OF ELECTRIC, THERMOELECTRIC,
AND PHOTOELECTRIC PROPERTIES
OF $\text{AgCd}_2\text{GaS}_{4-x}\text{Se}_x$, $\text{AgCd}_{2-x}\text{Zn}_x\text{GaS}_4$,
 $\text{Ag}_{1-x}\text{Cu}_x\text{Cd}_2\text{GaS}_4$, $\text{AgCd}_2\text{Ga}_{1-x}\text{In}_x\text{S}_4$,
AND $\text{AgCd}_2\text{GaS}_{4-x}\text{Te}_x$ SOLID
SOLUTIONS

*G.Ye. Davydyuk, I.D. Olekseyuk, O.V. Parasyuk,
S.V. Voronyuk, O.A. Dzham, V.I. Pekhnyo¹*

Lesya Ukrainka Volyn State University
(13, Volya Ave., Lutsk 43009, Ukraine;
e-mail: serge@lab.univer.lutsk.ua),

¹V.I. Vernadsky Institute for General and Inorganic
Chemistry, Nat. Acad. Sci. of Ukraine
(32/34, Academician Palladin Ave.,
Kyiv 03680, Ukraine)

S u m m a r y

Solid solutions $\text{AgCd}_2\text{GaS}_4\text{—AgCd}_2\text{GaSe}_4$,
 $\text{AgCd}_2\text{GaS}_4\text{—AgZn}_2\text{GaS}_4$, $\text{AgCd}_2\text{GaS}_4\text{—CuCd}_2\text{GaS}_4$,
 $\text{AgCd}_2\text{GaS}_4\text{—AgCd}_2\text{InS}_4$, and $\text{AgCd}_2\text{GaS}_4\text{—}$
 $\text{AgCd}_2\text{GaTe}_4$ are photosensitive materials, the
photoconductivity maxima of which fall into the
spectral region 500–800 nm, the specific value being
determined by the type and composition of the solution.
The experiments showed that most photosensitive
turned out the solid solutions $\text{AgCd}_{2(1-x)}\text{Zn}_{2x}\text{GaS}_4$
with $x = 0.2 \div 0.3$: at illuminance of 10^3 Lx, their
photoconductivity becomes about 300–500 times
higher. By their physical properties, the solid solutions
under consideration are similar to their electron
analogs, CdS—CdSe alloys. Similarly to the case of
binary semiconductor alloys, an abrupt change of the
energy position of centers, which are responsible for
optical activity of specimens, occurs in the range of
30–50 mol.% of the second component. A model that
explains the features of photoelectric properties of the
solid solutions concerned has been suggested.