بسم الله الرحمن الرحيم

شبكة المعلومـــــات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـــسـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

Ain Shams University
Faculty of Science

Phase Transition and Physical Properties of the Glassy System Ge-Se-Te

Thesis
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Physics

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إهداء

بوافر الود والعرفان اهدى هذا العمل لكل من :

الدكتور/ حسن رمضان وأولادى رانا وعمرو ووائل كما أهديه لوالدتى وذكرى أبى.

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Abstract

Two binary systems $Ge\ Se_{2.5}$ and $Ge\ Te_{2.5}$ were first prepared, by direct fusion of elements, then were used to prepare the system $(Ge\ Se_{2.5})_{1-x}\ (Ge\ Te_{2.5})_x$ with $0 \leq x \leq 1$, by direct fusion under vacuum and quenching.

The vitreous state of resulting materials was confirmed by X-ray technique.

The density of the prepared glasses were determined by a hydrostatic method at room temperature. The data was fitted to a relation of the type

$$d = 4.223 + 1.67\ 10^{-2}\ [Te],\ \text{where Te is Te at. \%}.$$

The specific electrical conductivity σ of the vitreous materials was measured in the temperature range up to 150 ℃, below the softening points.

The activation energy of conduction E_σ was found to fit the form:

$$E_\sigma = -0.9788 - 17.743\ ln\sigma_{20}$$

DSC thermograms were obtained at three different heating rates (10, 15 and 20 ℃/min), for all glass systems. Three characteristic transitions could be identified which are due to softening T_g, crystallization T_p and melting T_m procceses.

DTA thermograms were obtained at different heating rates (5 to 40 ℃/min) for all samples. The activation energy of crystallization E_c were calculated using four different approaches:

i- Augis and Bennett, ii- Ozawa-Chen, iii- Takhor and iv- **Kissinger** *methods.*

The order of crystallization was obtained on basis of two different methods. Ozawa method and a method from the χ_p *value.*

To examin the state of crystallization the samples were left to crystallize at the highest T_p *for arround (7 hrs). X-ray diffraction studies were done on powdored samples.*

The results were compared with those reported. in litrature