phase transfarmation studies on selenideglasses

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The electrical properties of the system Sego Ge10-x lnx (x = 2,4,6)have been measured in three stages, glassy state, crystalline state andsupercooled liquid state. The experimental results introduced thefollowing:1- Increasing of conductivity, dielectric constant, and dielectric losstangent with temperature for all of compositions in the glassy state.As the frequency increases, both of dielectric constant and dielectricloss tangent decrease, while the A.C conductivity increases.2- As the sample transformed into the crystalline state it has been foundthat the conductivity, dielectric constant and dielectric loss tangentdepend on the crystallization tamperature. Moreover the values of theseparameters in the crystalline state were higher than that in the glassystate.The temperature and frequency dependence of the mentionedparameters indicated a similar behaviour.3- For the first time, it has been used both of the dielectric constant andthe dielectric loss tangent to study the phase transformation for thedifferent compositions of the system Seg0 Ge10_x Inx (x = 2,4,6) byusing of the step wise method at the crystallization temperature 120,• 130, 140 and 150 C.It has been pointed out, by applying of Avrami equation and otherequations, that:a- The order of reaction (n) decreases as the crystallization temperatureincreases for all of the samples.b- The activation energy of crystallization increases as the indium contentincreases in the samples.C- The radius of the crystalline domain increases as the annealing timemcreases.d- The diffusion coefficient increases as the crystallization temperaturemcreases.