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Comments on the “Metallic nanoparticles (Cu, Ag, Au) in chalcogenide and oxide glassy matrices: comparative assessment in terms of chemical bonding” // *Semiconductor Physics, Quantum Electronics & Optoelectronics*, **20**(1), p. 26-33 (2017).

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Recently, in the work [1], restricted information collected from our references [2-4] was used for speculative and wrong conclusions based on this incorrectness and published for understanding the metal nanoparticles (MNPs) formation in chalcogenide and oxide glassy matrices. In particular, the authors of this work [1] have made some misleading opinions on the some statements which are not presented in our cited papers. First of all, the statement mentioned in the work [1] “...They asserted that Cu MNPs could be gathered in spherical entities of only 5 to 10 nm in radius, giving essential changes in optical linear absorption at the wavelengths 580...590 nm and response in nonlinear optical properties observed in Z-scan measurements...” has been not reported in the publications [2-4]. If some opinion regarding the size of ion-synthesized Cu nanoparticles in chalcogenide glasses was noted by the authors [2-4] in other publications (e.g., abstracts or conference materials), it could be only as assumption but not as assertion. In order to make such assertion on the size of MNPs as in our case, the optical linear absorption data are not enough. Therefore, our experiments with ion-implanted chalcogenide glasses are currently in progress to get more microscopy information.

Besides, a comparison of 40 keV Cu⁺-ion implantation into chalcogenide glasses [2-4] with a penetration of implanted ions in the near-surface region only up to 60 nm (from SRIM – The Stopping and Range of Ions in Matter simulation) with higher energy 70 keV [5] and 200 keV [6,7] Ag⁺-ion implantation into chalcogenide glasses, allowing a deeper penetration of implanted ions into the bulk of material, has also been incorrectly performed in the work [1]. From these reasons, a comparative assessment made by the authors [1] in terms of chemical bonding for metal nanoparticles formation in glassy and oxide matrices, when the penetration depth of implanted ions is fully ignored, is obviously absolutely wrong and inconclusive. Moreover, it is not a case of near-surface effects created by low-energy (30-40 keV) ion implantation [2-4, 8-10], especially for chalcogenides for which a polishing procedure may have uncontrolled impact on the homogeneous structure of glass in the near-surface region.

References

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