

On the Effect of the Co-Introduction of Al and Ga Impurities on the Electrical Performance of Transparent Conductive ZnO-Based Thin Films

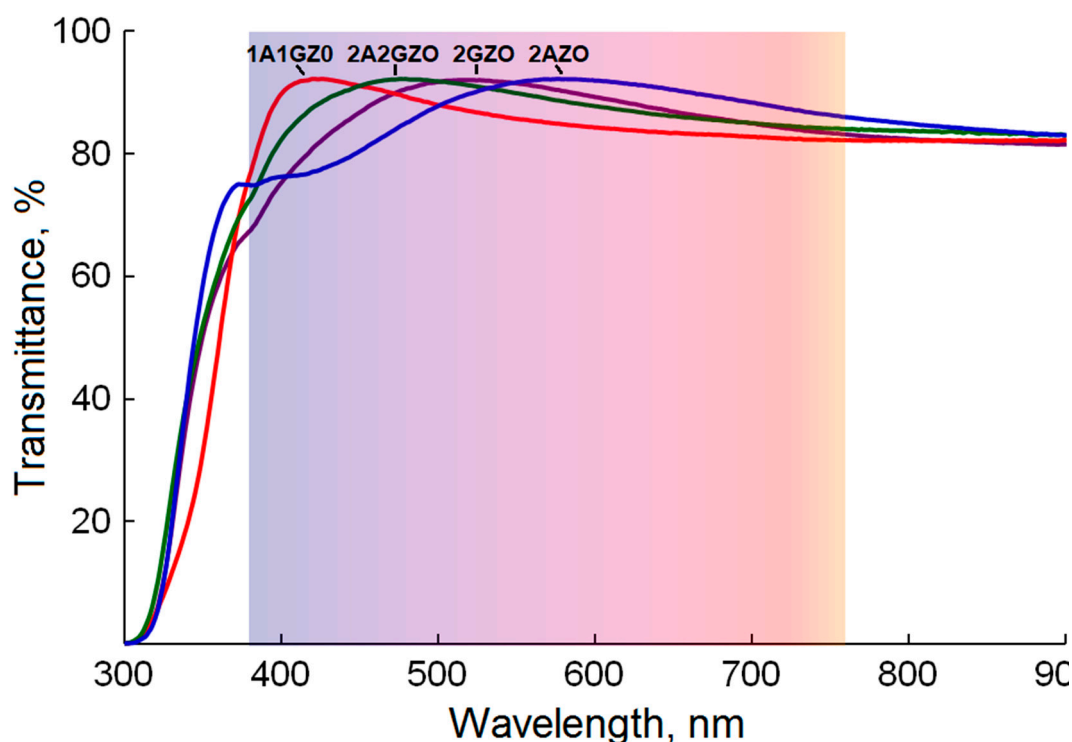
Abil S. Asvarov ^{1,2,*}, Aslan K. Abduev ³, Akhmed K. Akhmedov ¹ and Vladimir M. Kanevsky ²

¹ Institute of Physics, Dagestan Research Center of Russian Academy Sciences, Yaragskogo Str., 94, 367015 Makhachkala, Russia

² Shubnikov Institute of Crystallography, Federal Scientific Research Center “Crystallography and Photonics” of Russian Academy of Sciences, Leninsky Prospect, 59, 119333 Moscow, Russia

³ Basic Department of Nanotechnology and Microsystem Technology, Academy of Engineering, RUDN University, 117198 Moscow, Russia

* Correspondence: abil-as@list.ru



Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Figure S1. Transmittance spectra of glasses covered at 300°C by single-doped (2AZO, 2GZO) and co-doped (1A1GZO, 2A2GZO) thin films.

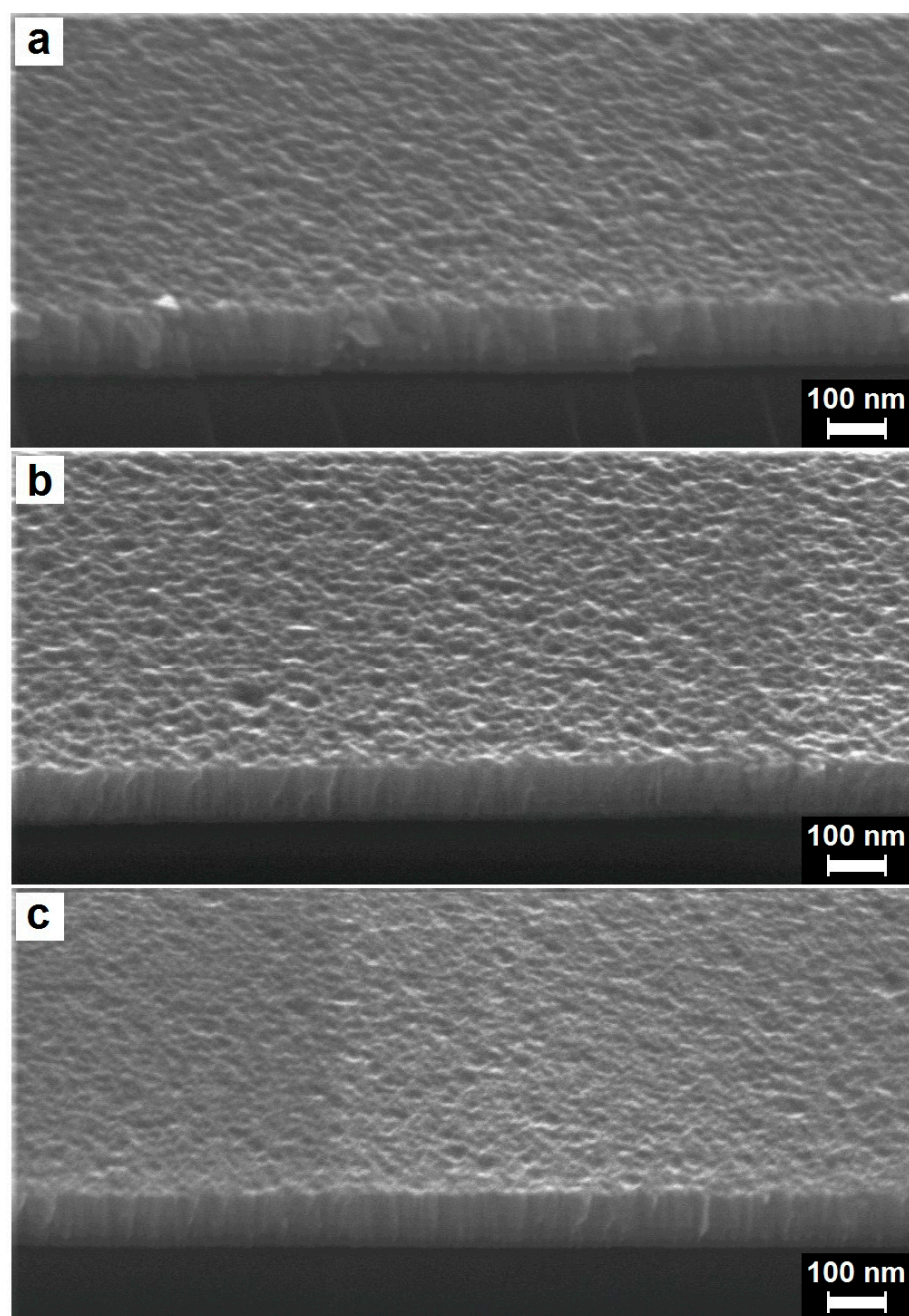


Figure S2. SEM micrographs of 2AZO (a), 2GZO (b), and 2A2GZO (c) thin films deposited at substrate temperature of 300°C.