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The invention relates to semiconductor technology, in particular to processes for producing semiconductor materials, in particular to unseeded growth of ZnO single crystals with different surfaces in a closed volume.
Three processes for producing ZnO single crystals with different surfaces are proposed, the first process consists in unseeded growth of ZnO single crystal from a vapor phase in a closed volume, in which the ZnO charge is loaded using HCl chemical transport agents, with an initial pressure at a growth temperature of 1…8 atm and C, taken in a molar ratio C:HCl=0.35…0.48 for growing single crystals with nonpolar surface. The single crystal growth is carried out at a temperature of 900…1100°C, with a temperature difference between the charge and the growing crystal of 10…100°C. In the second process, the molar ratio is C:HCl=0.5…0.58 for growing single crystals with polar surface, and in the third process, the molar ratio is C:HCl=0.6…0.75 for growing single crystals with semi-polar surface.

Claims: 3
Fig.: 4