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The invention relates to the semiconductor technique and may be used for obtaining the indium phosphide epitaxial layers having controlled electrophysical parameters.

For removing the source material losses during phosphor saturation thereof and for providing the gase phase compound control by means of the proposed process, including the equipment preparation, bases chemical etching, reactor blow-down within the hydrogen, trichloride thermostatic control, source and bases heating, bases gas etching, the layers growing is conducted by using as source simultaneously the liquid indium and the solid indium phosphide, located in the separate channels.

The technical result of the invention, consists in indium losses prevention at its saturation with phosphor and in the improvement of the epitaxial layers parameters reproduction by the controlled elements proportioning in the gas phase.