Abstract

The present invention relates to a method for fabricating a strained crystalline layer on an insulator, to a semiconductor structure for fabricating a strained crystalline layer on an insulator, and to a semiconductor structure which is fabricated therewith. It is the object of the present invention to provide a semiconductor structure and an easy method for fabricating a semiconductor structure having a high crystal quality and having a high strained crystal semiconductor layer on top of an insulator. The object is solved by a method and a semiconductor structure for fabricating a strained crystalline layer on an insulator, the method comprising: providing a semiconductor donor substrate comprising germanium and/or an A(III)-B(V)-semiconductor, providing at least one first crystalline epitaxial layer, in a first step, wherein the content of germanium and/or the A(III)-B(V)-semiconductor of a buffer layer of the first layer is decreased during the first step; providing at least one insulator layer, in a second step; wherein the first layer is provided between the substrate and the insulator layer; splitting of the first layer, in a third step; and providing at least one second crystalline epitaxial layer on the split first layer, in a fourth step. The object of the invention is further solved by a method and a semiconductor structure for fabricating a strained crystalline layer on an insulator, the method comprising: providing a semiconductor donor substrate comprising germanium and/or an A(III)-B(V)-semiconductor; providing at least one first crystalline epitaxial layer, in a first step, wherein the content of germanium and/or the A(III)-B(V)-semiconductor of the first layer is decreased during the first step; wherein the first layer is provided between the donor substrate and the second layer; providing at least one second crystalline epitaxial layer, in a second step; providing at least one insulator layer, in a third step, wherein the second layer is provided between the first layer and the insulator layer; and splitting the structure between the first layer and the second layer, in a fourth step.