EFFICIENT AND STABLE VISIBLE PHOTOLUMINESCENCE OF NANOCRYSTALLINE SILICON FILMS OBTAINED BY LASER ABLATION

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S u m m a r y

A strong and stable photoluminescence in the range 400 – 900 nm is observed in Au-passivated nanocrystalline Si films prepared by laser ablation. Passivation by Au reduces the display of Si dangling bonds and increases the luminescence intensity. Au induces the oxidation of Si nanocrystals and changes the inter surface structure from SiO_x ($0 < x < 2$) to silicon dioxide with a higher potential barrier and better stability.