



Stabilisation of the electrical and optical properties of dielectric/Cu/dielectric structures through the use of efficient dielectric and Cu:Ni alloy

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Résumé en anglais	Dielectric/Metal/Dielectric structures can be used as substituent to transparent conductive electrodes. The dielectric used is often a transition metal oxide such as MoO_{3-x} and the metal is Ag. In the present work we propose to substitute Cu to Ag. The difficulty with Cu is its high diffusion rate into MoO_{3-x} . In order to prevent this negative effect we used Cu:Ni alloy as metal layer. If using such alloy is efficient to reduce Cu diffusion, it works well only with WO_{3-x} and not with MoO_{3-x} . We show that after deposition of the alloy only 0.5 at% of Ni is present in Cu films. This small atomic concentration makes it possible to preserve the electrical and optical properties of the metal films but limits its control of Cu diffusion in time. Therefore it is necessary to use an oxide, here WO_{3-x} , which also limits the diffusion of metals. By adding these two effects due to the alloy and the oxide it is possible to form Dielectric/Metal/Dielectric structures with quite stable properties. These $\text{WO}_{3-x}/\text{Cu:Ni}/\text{WO}_{3-x}$ structures can be used as anodes in organic photovoltaic cells. The different behaviors of the structures according to whether they use WO_{3-x} or MoO_{3-x} are discussed in terms of thin film porosity.
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