### Nanocomposites and nanomaterials

## Mechanism of interlayer formation in Sc/Si multilayer X-ray mirrors

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Degree of interlayer mixing and interlayer composition in Sc/Si multilayer X-ray mirrors (MXMs) with layer thicknesses of $t<15$ nm deposited by direct current magnetron sputtering are studied using methods of hard ($\lambda=0.154$ nm) and soft ($\lambda=46.9$ nm) X-ray regions. The thickness of interlayers is shown to depend on the deposition conditions and can vary several times. In all cases the interlayer composition retains constant and corresponds to scandium monosilicide. Diffusivity and temperature of MXM surface during interlayer formation were estimated. Pretorius model [1] is used to specify details of silicide interlayer formation, Mechanism of interlayer formation during deposition of scandium and silicon layers is proposed.

1. *René Pretorius , Christiaan C. Theron , André Vantomme and James W. Mayer* Compound Phase Formation in Thin Film Structures // Critical Reviews in Solid State and Materials Sciences.-1999.-**24** (1).-P. 1-62.