

BornAgain - Support #904

Resonator simulations for Frederik Lipfert

24 Nov 2014 11:01 - ganeva

Status:	Resolved	Start date:	24 Nov 2014
Priority:	Normal	Due date:	
Assignee:	ganeva	% Done:	0%
Category:		Estimated time:	0.00 hour
Target version:			
Description			
<p>The base silicon block has the dimensions 4 x 8 x 15 cm. On top of the silicon block face (8 x 15) there is the multilayer resonator system consisting out of alternating layers of Ti (130Å) and Pt (320Å). There are two systems, one with 3 alternating layers, the other with 5 alternating layers. In both cases there is a final completion layer of Ti (100Å) + TiO (30Å) on top of the last Pt layer. The Surface roughness for all layers is 2Å. The tolerance for the thickness of the Pt layer is 20Å, the tolerance of the thickness of the Ti layer is 10Å.</p> <p>Scattering Length Densities of the Resonator: Si: 2.074 (10⁻⁶)/Å² Ti: -1.925 (10⁻⁶)/Å² Pt: 6.357 (10⁻⁶)/Å² TiO: 0.230 (10⁻⁶)/Å²</p> <p>Scattering Length Densities of the Microemulsion: D2O: 6.356 (10⁻⁶)/Å² D-Decan (C10D22): 6.486 (10⁻⁶)/Å² C10E4 (C18H38O5): 0.113 (10⁻⁶)/Å²</p> <p>The microemulsion is mixed with D2O (41.5%), D-Decan (41.5%) and 17% C10E4 and therefore has an average contrast of 5.354 (10⁻⁶)/Å². So the simulated setup should be the resonator in contact with a medium with a scattering length density of 5.354 (10⁻⁶)/Å².</p> <p>The wavelengths that are to be simulated are 4.5Å, 6Å, 8Å and there corresponding critical angles are 0.26°, 0.35°, 0.46°.</p> <p>The apertures slit are slim with openings of 0.4mm and 144mm for the sample aperture and 0.4mm and 58mm for the guide aperture</p> <p>In a first step we are interested in the reflectivity curves describing the expected dips in intensity in the total reflection plateau. Therefor the reflectivity should be simulated up to 3°. If the dips are visible, in a second step we would be interested in the intensity of the evanescent wave at 100Å away from the resonator surface in dependance of the incoming angels below the critical angle of total reflection.</p>			

History

#1 - 08 Jan 2015 16:40 - ganeva

- Status changed from New to Resolved