

**Sample 1.0-8815, both-sides coated**

The PCI technique uses a pump probe method.

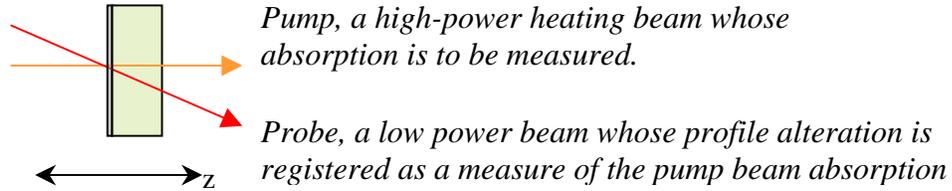
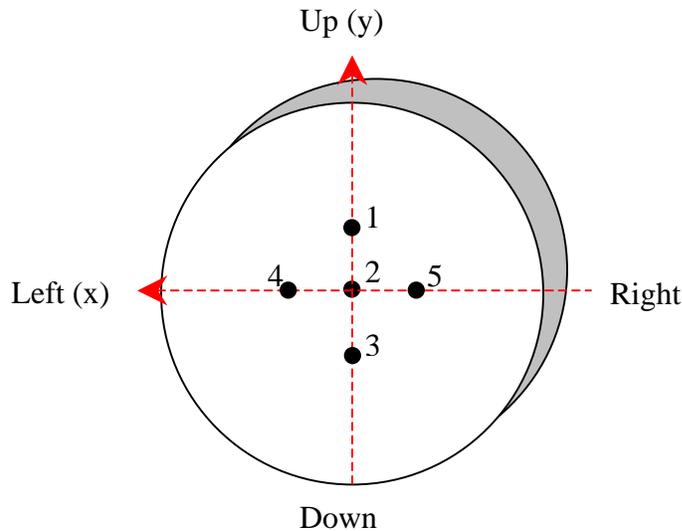


Fig. 1. A scan through the surface (z-scan). Side view.

The absorption loss is measured in a local point with diam c.a. 70  $\mu\text{m}$ . Five points were measured for averaging the value of the absorption coefficient. The points measured were lost after the sample has been removed from the holder.



The “center” point has (x,y) coordinates (0,0) with an accuracy  $\pm 0.5$  mm.

Point names:

1	3000 $\mu\text{m}$ above the center point	U (up)
2	Center point	C (center)
3	3000 $\mu\text{m}$ below the center point	D (down)
4	3000 $\mu\text{m}$ to the left from the center point	L (left)
5	3000 $\mu\text{m}$ to the right from the center point	R (right)

The HR and AR coatings can be discerned by measurements from both sides. Two schematic drawings below show how the scans must look like if: a) the front surface is AR, 2) the front surface is HR.

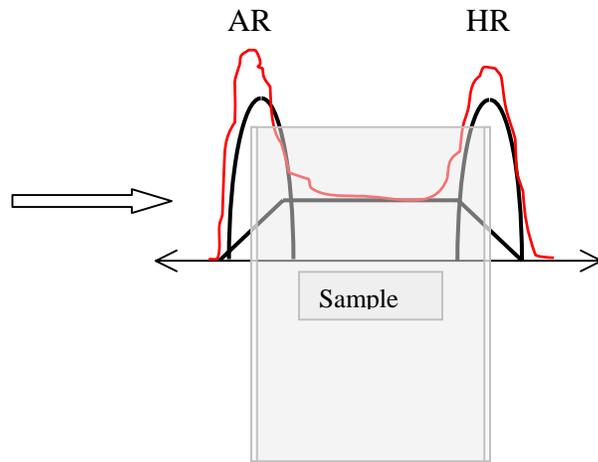


Fig.2. A schematic drawing of a z-scan when the front surface is the AR coating. The sample is heated along the whole path of the pump, so the set up records a thermalized absorption signal from the surface and inside the substrate, too.

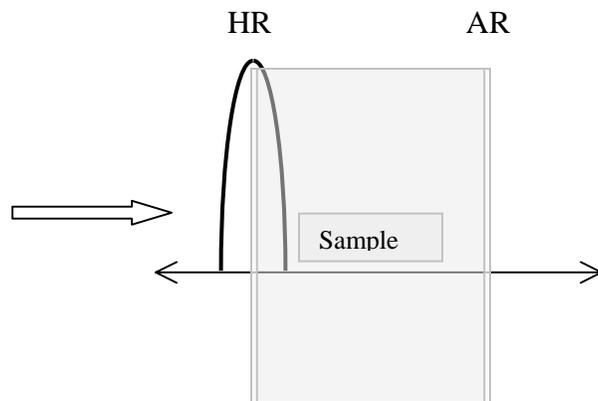


Fig.3. A schematic drawing of a z-scan when the front surface is the HR coating. Only the front surface is heated by the pump, therefore the set up records a thermalized absorption signal from the front surface only.

Two characteristic z-scans for sample #8155 are given below. In both cases a reduced pump power, 1.3 W, had been used in order to avoid a possible burning of the coatings.

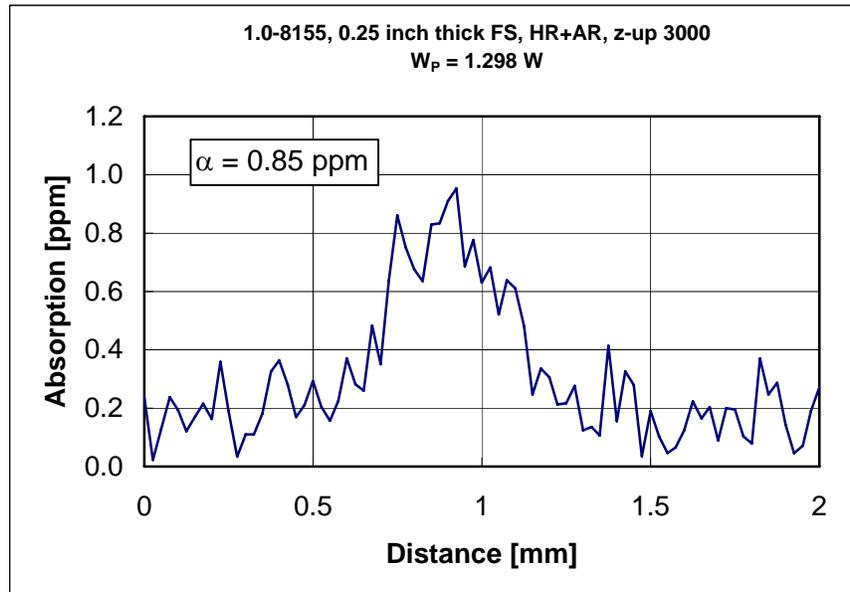


Fig.4. A z-scan of sample #8155 when the front surface is the HR coating (the side pointed by arrow). Only the front surface is heated by pump, therefore no signal is seen from the substrate. Alpha =  $0.85 \pm 0.05$  ppm.

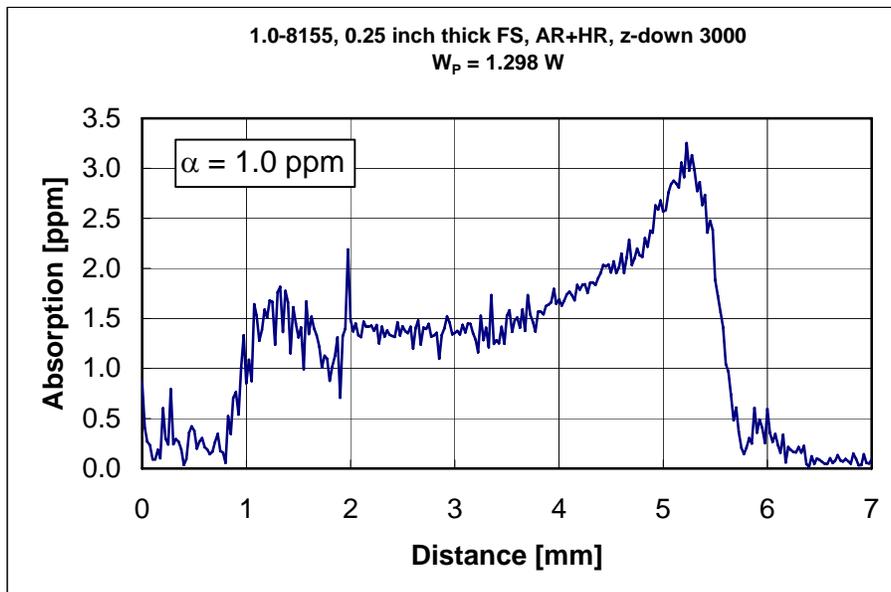


Fig.5. A z-scan of sample #8155 when the front surface is the AR coating. The absorption of the AR coating is:  $1.7 - \frac{1.4}{2} = 1.0 \pm 0.1$  ppm (a half of the substrate signal at the surface is subtracted). Note, the rear surface signal does not correspond to that shown on figure 3 since it is not calibrated (the pump power on the rear surface is not 1.3 W).

**I. Numerical data on sample 1.0-8155**

Sample #	Absorption (ppm)						Comments
	C	R	L	U	D	Average	
AR coating	0.9	0.9	0.9	0.85	1.0	<b>0.9</b>	<i>The HR surface had visible defects on it. The point C was not perfect one and was not taken into account in averaging.</i>
HR coating	<b>2.0</b>	1.2	1.0	1.0	1.0	<b>1.05</b>	

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