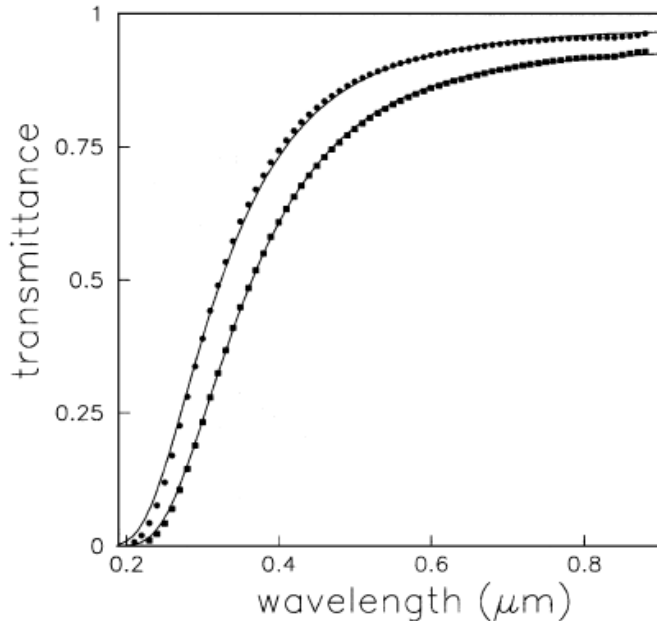## Optical characterization of $n = 1.03$ silica aerogel used as radiator in the RICH of HERMES

Hunt formula:
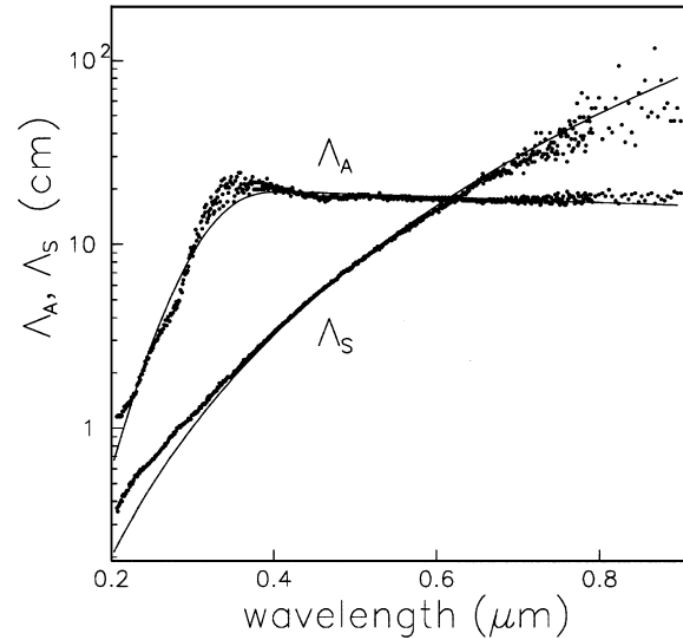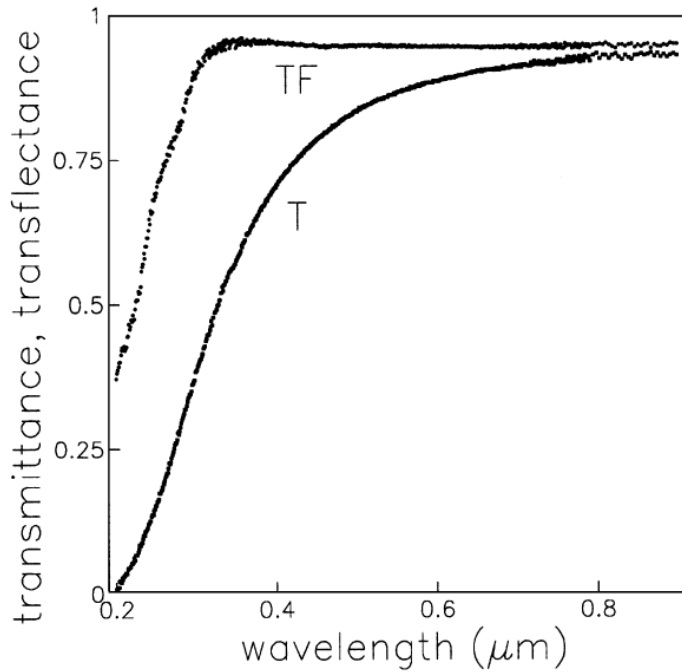
$$T = Ae^{-Ct/\lambda^4}$$

Hunt parameter	Average value	σ (%)
A	0.964	2.4
Ct (μm^4)	0.0094	8.3

A is equivalent to the Transfectance TF, and $\Lambda_A = -t/\ln A$ can be used to extract the **absorption lenght**

Ct is proportional to the radiation scattered: $\Lambda_S = \lambda^4 / Ct \cdot t$ can be used to extract the **scattering length**

Optical characterization of $n = 1.03$ silica aerogel used as radiator in the RICH of HERMES

Transflectance: $\mathrm{TF} = \mathrm{e}^{-t/\Lambda_{\mathrm{A}}}$

Λ_A = Absorption lenght (cm)

Transmittance $\quad T = \mathrm{e}^{-t(1/\Lambda_{\mathrm{A}} + 1/\Lambda_{\mathrm{s}})} = \mathrm{e}^{-t/\Lambda}$

Λ_S = Scattering lenght (cm)

Left panel, top plot:

χ²/ndf 22.89 / 139
P1 0.9526
P2 0.3009E-01

Jap 1.05 1cm+1cm standard

Transflectance / Transmittance vs Wavelength (μm)

Left panel, bottom plot:

Scattering lenght (cm) / Absorption lenght (cm) vs Wavelenght (μm)

Right panel, top plot:

transmittance, transflectance vs wavelength (μm)

TF
T

Right panel, bottom plot:

Λ_A, Λ_S (cm) vs wavelength (μm)

Λ_A
Λ_S