Antireflection coating on medium with refractive index n2

Calculation of R and T from eq.6.26. To be more general we call the matrix elements Mik, including a refractive index n1 in the first medium, and setting A3/A1 =x, A1'/A1 = y, and k' = kk

we have for the system of linear equations

Given

$$x \cdot e^{i \cdot kk \cdot d} = M11 \cdot (1 + y) + M12 \cdot (-n1 + n1 \cdot y)$$

$$-n3 \cdot x \cdot e^{i \cdot kk \cdot d} = M21 \cdot (1 + y) + M22 \cdot (-n1 + n1 \cdot y)$$

Find(x, y)

$$\begin{bmatrix} \dfrac{-2}{[\exp(i \cdot kk \cdot d) \cdot (M21 + M22 \cdot n1 + n3 \cdot M11 + n3 \cdot M12 \cdot n1)]} \cdot n1 \cdot (M21 \cdot M12 - M22 \cdot M11) \\ \dfrac{-(-n3 \cdot M12 \cdot n1 - M22 \cdot n1 + M21 + n3 \cdot M11)}{(M21 + M22 \cdot n1 + n3 \cdot M11 + n3 \cdot M12 \cdot n1)} \end{bmatrix}$$

$$t = \left[\frac{-2}{[\exp(i \cdot kk \cdot d) \cdot (M21 + M22 \cdot n1 + n3 \cdot M11 + n3 \cdot M12 \cdot n1)]} \cdot n1 \cdot (M21 \cdot M12 - M22 \cdot M11) \right]$$

$$r = \frac{-(-n3 \cdot M12 \cdot n1 - M22 \cdot n1 + M21 + n3 \cdot M11)}{(M21 + M22 \cdot n1 + n3 \cdot M11 + n3 \cdot M12 \cdot n1)}$$

$$t \cdot \bar{t} = \frac{-2 \cdot [n1 \cdot (M21 \cdot M12 - M22 \cdot M11)]}{M21 + M22 \cdot n1 + n3 \cdot M11 + n3 \cdot M12 \cdot n1} \cdot \overline{\frac{-2 \cdot [n1 \cdot (M21 \cdot M12 - M22 \cdot M11)]}{M21 + M22 \cdot n1 + n3 \cdot M11 + n3 \cdot M12 \cdot n1}}$$

$$R = \left[\frac{-(-n3 \cdot M12 \cdot n1 - M22 \cdot n1 + M21 + n3 \cdot M11)}{(M21 + M22 \cdot n1 + n3 \cdot M11 + n3 \cdot M12 \cdot n1)} \right]^2$$