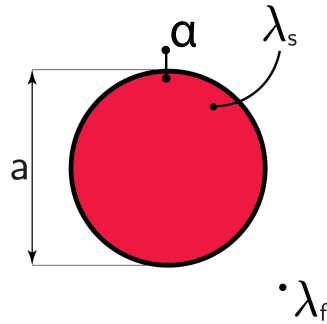


Biot Number 06

Give an expression for the Biot number of a sphere in terms of given variables.



The standard expression for the Biot number is:

$$\text{Bi} = \frac{\alpha L_c}{\lambda_s}$$

The characteristic length in the given situation should be determined.

In this case, the characteristic length is:

$$L_c = \frac{V}{A_s} = \frac{\frac{4}{3}\pi \left(\frac{a}{2}\right)^3}{4\pi \left(\frac{a}{2}\right)^2} = \frac{a}{6}$$

With this finding, the Biot number in the given situation can be expressed as:

$$\text{Bi} = \frac{\alpha a}{6\lambda_s}$$