

Answer on Question 39832, Physics, Optics Question: Concentric spherical shells of radii R_1 and R_2 joined by a thin wire the outer shell carries charge Q find the charge on the inner shell.

Solution. Let us suppose $R_1 > R_2$. If shells are connected, then they have equal potential. From this condition we can find the charge on the inner shell

$$V_1 = V_2$$

$$k \frac{Q}{R_1} = k \frac{q}{R_2}$$

On the inner shell charge is

$$q = Q \frac{R_2}{R_1}$$