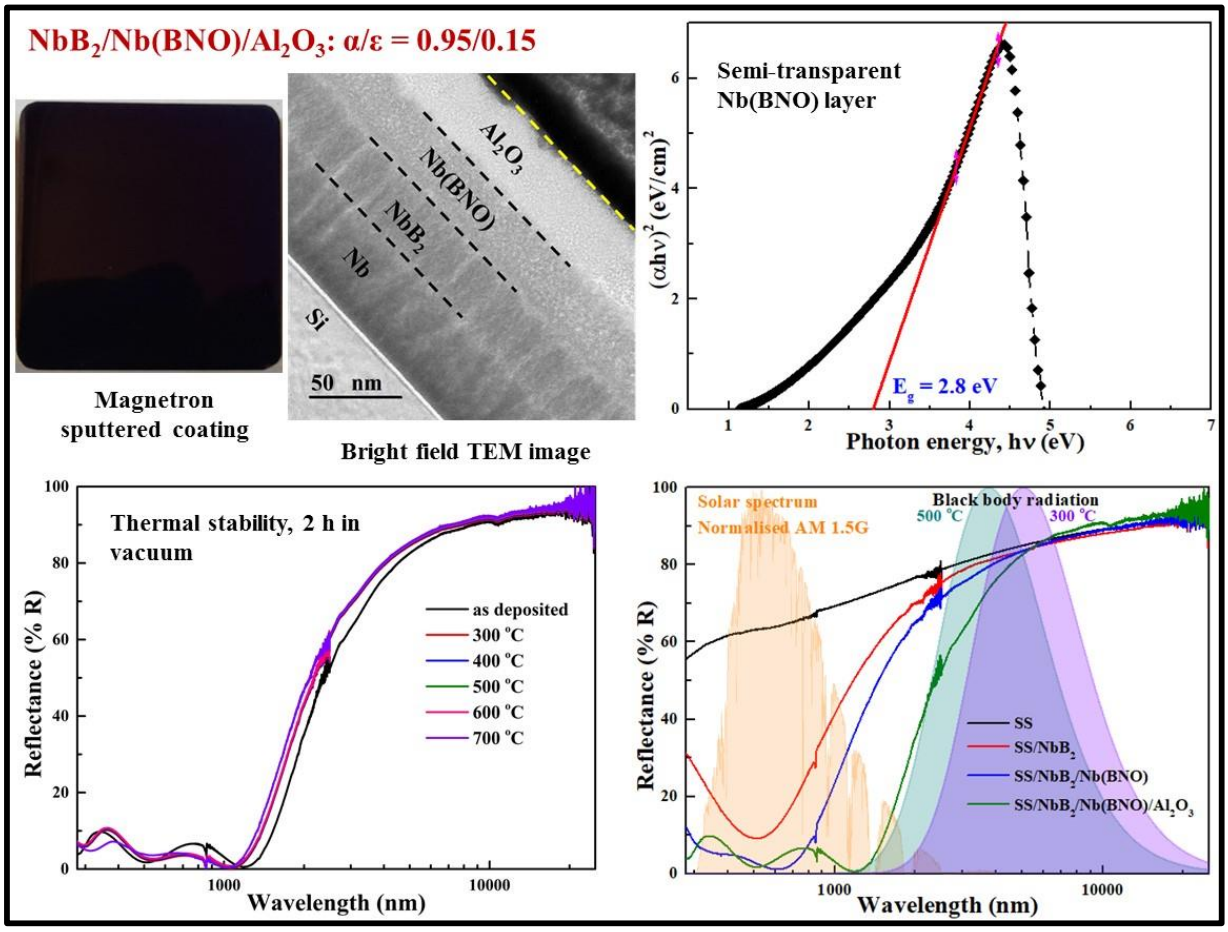
Ranjith Kumar P, Mahander P. Singh and Bikramjit Basu; Probing the spectrally selective property of NbB2-based tandem absorber coating for concentrated solar power application; **Journal of the American Ceramic Society** (2021)

Graphical Summary:



Significance/Impact

For the first time, we reported the development of NbB_2-based tandem absorber coatings with their high thermal stability and good solar selectivity. Spark plasma sintered NbB_2 ceramic exhibits high solar absorptance ($\alpha = 0.756$) and moderate thermal emissivity ($\varepsilon = 0.43$). An amorphous NbB_2 coating exhibits $\alpha/\varepsilon = 0.716/0.13$. The developed $SS/NbB_2/Nb(BNO)/Al_2O_3$ tandem absorber exhibits a good solar absorptance of 0.950 and a moderate thermal emissivity of 0.15 at room temperature. The coatings exhibited good thermal stability when heated in vacuum for 5 h up to 700 °C, and the spectral selectivity (α/ε) remains above 6.0.