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Calorimetric measurement of interface enthalpy of nanocrystalline silver(I) oxide (Ag_2O)

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The interface enthalpy of nanocrystalline silver(I) oxide ($Ag_2O.nH_2O$) was measured. $Ag_2O.nH_2O$ nanocrystalline samples of varying surface areas and degrees of agglomeration were synthesized by wet chemical technique. Interface areas were estimated by comparing the surface areas measured by N_2 adsorption to the crystallite sizes refined from X-ray diffraction data. The interface enthalpy was verified by utilizing thermodynamic cycle, using enthalpy of solution measurements in 25% HNO_3 at room temperature solution calorimetry. The interface enthalpy of the nanocrystalline $Ag_2O.nH_2O$ is (0.842 ± 0.508 J/m2). This work provides the first calorimetric measurement of the interface enthalpy of nanocrystalline silver(I) oxide ($Ag_2O.nH_2O$).

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