Applying Nano Technology To Remove Toxic H2S Gases Compounds From Exhaust Gases In Primary Aluminium Industry (Monte Carlo Simulation)

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Dealing with the exhaust gases from aluminium smelters is still an interesting subject for investigation. The amount of H$_2$S in aluminium reduction cells is enough to produce H$_2$S gas. Immediate removal of the highly toxic H$_2$S gases makes FTP (Fume Treatment Plant) to just deal with fluoric gases such as HF. Due to the capability of nanotubes in adsorbing gases, this study has been conducted to figure out the adsorption of H$_2$S on (8,8) armchair carbon nanotubes (CNTs). Lennard-Jones potential was used for gas-gas and gas-carbon nanotube interactions and the potential parameters for the carbon-gas and carbon-carbon interactions were obtained from the Lorenz-Berthelot combining rules. The study has been done by using the equation state of Virial and finding the second coefficient in Virial equation. Final steps were the inside density, outside density and total density of nanotubes calculation. Calculations showed that the absorption rate increases with increasing pressure and decreasing temperature.

Carbon nanotube, adsorption gas , Monte Carlo simulation

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