Scanning tunneling microscopy enables us an atomic scale look at the surface structure of supported MoS$_2$ clusters on a TiO$_2$ (110) substrates. Initial results are encouraging that model MoS$_2$ clusters can be synthesized by vapor phase deposition in ultra high vacuum. These TiO$_2$ supported MoS$_2$ clusters will be used in future studies for characterization of the fundamental mechanisms in the hydrodesulphurization reaction.