# Wettability Behaviour of Synthesized Carbon Nanospheres and its Application as a Photocatalyst

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Superhydrophobic and superhydrophilic surfaces have been widely investigated due to their diverse range of applications such as self cleaning, microfluidic application in biotechnology, corrosion, Anti-reflecting coatings and micro-electronic mechanical system etc. Here, a facile chemical vapour deposition method is reported for synthesis of carbon nanospheres (CNSs). Henceforth, morphology of as-synthesized sample is characterized using scanning electron microscopy (SEM) and transmission electron microscopy (TEM). X-ray diffraction (XRD), Raman spectroscopy and FTIR spectroscopy are used to determine the phase purity, chemical composition and presence of chemical bonds on the surafce of synthesized CNSs. TEM and SEM results reveal the presence of CNSs with diameter ranging from 50 nm to 400 nm. Raman spectroscopy confirms the presence of disordered carbon and low graphitization, which are also confirmed by TEM and XRD results. Optical properties of as-synthesized CNSs is investigated by UV-Vis spectroscopy and photoluminscence. Wettability behaviour of as-synthesized carbon nanospheres is investigated by contact angle measurements. CNSs shows a water contact angle of $152^0$, which confirms the fabrication of superhydrophobic carbon nanosphere surface. After the proper explanation of wettability behaviour,it also disscusses the application of as-synthesized CNSs as a photocatalyst. As it is well known, catalyst enhances the chemical reaction rate without changing its properties. Therefore, various kind of catalysts have been developed for the purpose to enhance the catalysis for environmental applications. Among different materials carbon based materials are widely used as a catalyst support due to their excellent properties. Considering these facts, the degradation of organic pollutant under UV light is discussed here using CNSs.