Dr Mümin Mehmet KOÇ

School of Engineering
University of Portsmouth

Non-Contact AFM Investigation of Silicon Nanoparticles Deposited on HOPG

Silicon nanoparticle produced in liquid was investigated by using non-contact atomic force microscopy (AFM). Silicon nanoparticles were produced using gas aggregation method and co-deposited with water. The suspension was drop cast on the highly oriented pyrolytic graphite (HOPG). Drop cast nanoparticles were then, transferred in ultra-high vacuum (UHV) AFM and investigated in non-contact mode. Consecutive scans were performed in various experiments. It was understood that the nanoparticles deposited on HOPG moves on the surface. It was concluded that rastering effect of AFM tip produce an influence on nanoparticles and activates them. In certain experiments, it was seen that the nanoparticles deposited on the surface self assembles produce stripe like nano formations. It was seen that these shapes were templated by Moiré patterns. In additions, it was also evidenced that the defect domains occur in the Moiré pattern could be elf repaired. These self-assembly process and self-repair process activated by the rastering effect of AFM.