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SYNTHESIS AND CHARACTERISATION OF TITANIUM AND GOLD NANOPARTICLES USING A SOFTLANDING SYSTEM

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Titanium (Ti) and Gold (Au) nanoparticles have been prepared on silicon (Si) substrates using a soft landing system.⁽¹⁾ The system is based on magnetron sputtering technique that can be used to generate nanoparticles of sizes ranging from 30 atoms up to 15 nm in diameter. The formation and size of the nanoparticle population can be controlled by varying several parameters which includes, gas flow over the magnetron (Argon), carrier gas flow (Helium), plasma power, aperture geometry and position. The morphologies, granularities and structures of Ti and Au nanoparticles have been investigated using XPS, TEM and AFM. The prospect of obtaining highly regular 2D nanoparticles clusters is discussed. Recent results showed that 2D arrays of nanoparticles/nano-patterned surfaces can significantly enhance the sensitivity of Surface Plasmon Resonance (SPR) biosensor.⁽²⁻⁵⁾ The SPR biosensors have shown huge potential to detect various chemical and biological analytes with highly sensitive real time monitoring ability. This work will be the basis of the development of novel 2D arrays using metal nanoparticles in SPR biosensing.

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