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**Growth, structure and magnetic properties study of CVD cobalt layers**[1] NIRMALENDU DEO, HAROLD S. GAMBLE, The Queens University of Belfast, UK — Chemical vapour deposition (CVD) of cobalt was performed on oxidised silicon wafers at the temperature ranges 300-450 $^o$C, in hydrogen ambient, from cobalt tricarbonyl nitrosyl. For deposition of cobalt at 300 $^o$C the layer was found to be highly resistive ($\sim$250$\mu\Omega$cm). As the deposition temperature increases the layer resistivity decreases, and at 450 $^o$C the layer resistivity was reduced to $\sim$30$\mu\Omega$cm. Thus reduced resistivity is taken as evidence that the cobalt layer is purer. X-ray diffraction of the cobalt layers reveal both hcp and fcc peaks. The AES analysis shows that cobalt layer deposited at 300 $^o$C contains 26atom %O, 10atom %N. At higher deposition temperature of 400$^o$C and above the impurities was 1% or less as documented by AES. At 300 $^o$C deposited cobalt layer the surface looks agglomerated as seen by SEM. At 350 $^o$C the grain structure is elongated and at 400 $^o$C and above the grain structure changes to hexagonal structure. At this temperature the cobalt phase-change occurs from hcp to fcc. The roughness of cobalt layer is higher in lower deposition temperature but this is only due to higher layer thickness measured by AFM. VSM shows, the saturation of magnetisation (Ms) for layers deposited at 400 $^o$C and 450 $^o$C is consistent with the bulk value of 1422 emu/cm$^3$. As the cobalt deposition temperature increases, the layer coercivity decreases from 705 to 400-Oe.

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