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Deposition of thin Cr3C2 hard coatings using Radio Frequency Magnetron Sputtering for SBS characterization

Cr3C2 films on Si have been grown by RF sputtering at 0 and -60V bias to observe stress relaxation using surface Brillouin scattering. A RF power of 175W and Ar2 working gas pressure of 5.0 x10-3mBar was used to yield a deposition rate of 0.16nm/s. Surface Brillouin studies on the -60V biased and the unbiased samples show high frequency Sezawa modes indicative of high film quality. The dispersion curves have shown an increase in the elastic constants corresponding to an increase in residual stress upon biasing. The elastic constants will be extracted from the dispersion curves.

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