Deposition of DLC layers on steel substrates by mid-frequency PACVD in a roll to roll process

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Diamond-like carbon films (DLC) are suitable coatings for high wear-resistance and low friction applications. The most common method for the DLC-films deposition is plasma activated chemical vapour deposition (PACVD) process with radio frequency (13.56 MHz). This process implementation for large industrial roll to roll applications on metallic substrates is expensive and technically difficult because it involves self-bias voltages. We report in this paper the deposition of DLC coatings on steel substrates by a specific roll to roll dual PACVD process using mid-frequency (40 to 150 KHz) power supplies. The physico-chemical characterization and in use properties of the DLC layers are presented and discussed in relation with the process characteristics.

Keywords
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