• An experiment has been carried out to study the particle growth in a DC glow discharge argon plasma with two parallel graphite electrodes.
• The experimental results showed that the more carbon particle erode if the experiments have performed for longer time and higher discharge voltage and background pressure.
• The particles growth initially increases with time and then saturates in a span of discharge parameters.
• The sputtering process becomes more efficient when the cathode is biased with negative voltage.
• We believe, our experimental results will be helpful to fusion community to understand the sputtering from carbon walls of different tokamaks.