# Sticking coefficients of selenium and tellurium

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**Project Summary: The sticking coefficients of thermally evaporated chalcogen elements selenium and tellurium were experimentally determined as a function of temperature. Their direct and quantitative determination provides important insights to comprehend and realistically model the growth kinetics of chalcogenide-based film growth.**

A direct way to determine the ratio of chalcogenide elements sticking to a film surface is to measure the rate of mass accumulated, which was achieved by depositing selenium and tellurium on a quartz crystal microbalance held at different temperatures. Pronounced reduction of the sticking coefficients by a factor of 4 in a very narrow temperature range of 20°C and 30°C around temperatures of 35°C and 115°C were found for selenium and tellurium, pointing towards the critical need of precise temperature control during chalcogenide film growth using molecular beam epitaxy. The results reveals that unlike tellurium, selenium is supplied in different chemical forms with different desorption characteristics.

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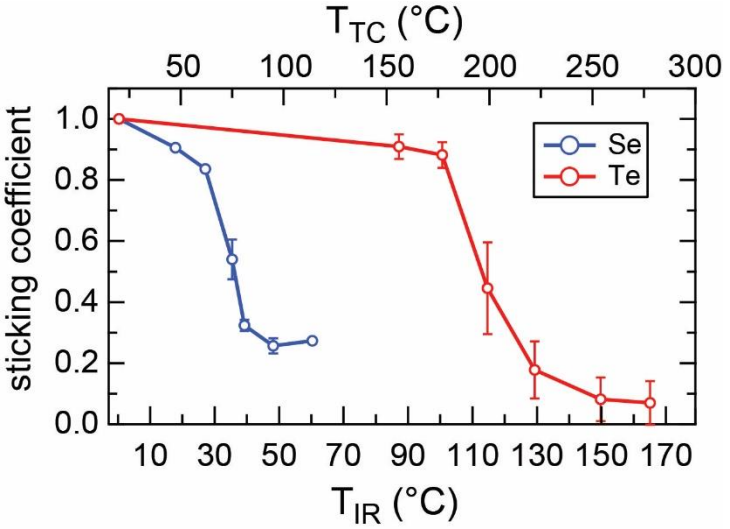


**2DCC Role: The 2DCC Experiment/Characterization facility has generated a data set that forms the basis to develop realistic growth kinetics simulations to overcome particular synthesis challenges prone to the growth of chalcogenide-based compounds by molecular beam epitaxy.**