Room temperature stability of mass selected Ag clusters on $C_{60}$ functionalized surfaces$^1$ STEFANIE DUFFE, LUKAS PATRYARCHA, TORSTEN RICHTER, BENEDIKT SIEBEN, HEINZ HÖVEL, Technische Universitaet Dortmund, Experimentelle Physik I, Germany, CHUNRONG YIN, BERND VON ISSENDORFF, Universitaet Freiburg, Fakultaet fuer Physik, Germany, MICHAEL MOSELER, Fraunhofer-Institut fuer Werkstoffmechanik IWM, Freiburg, Germany — Mass selected clusters from Ag$_{55}^+$ to Ag$_{561}^+$ were soft landed on HOPG and Au(111) functionalized with 1 and 2 monolayers (ML) of $C_{60}$ molecules [1]. Depositions at 165 K gave extremely narrow cluster height distributions in STM images measured at 77 K. Using $C_{60}$/HOPG or 2 ML $C_{60}$/Au(111) the cluster heights are stable for more than 12 h at room temperature (RT). For 1 ML $C_{60}$/Au(111) the cluster height decreases and finally all clusters disappear at RT. Molecular dynamics simulations reveal a process by which the clusters decay atom by atom through 1 ML $C_{60}$/Au(111) at RT. A sharp maximum at 1.7 nm cluster height forms during the cluster decay, indicating that there exists some metastable 'supported magic number'.


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