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On line gas phase separation of At and other halogens under ambient conditions

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Recently, first gas-phase chemical experiments aimed to investigate the adsorption behavior of the heavy elements Cn and Fl on selenium surfaces were conducted. During this experimental campaign, an unexpected formation and transport of a volatile At species was observed. Monte-Carlo simulations of the deposition pattern of this species on quartz, selenium, and gold surfaces were performed, and the corresponding adsorption enthalpies $\Delta H_{\text{ads}}\text{SiO}_2(\text{AtOxHy})$, $\Delta H_{\text{ads}}\text{Se}(\text{AtOxHy})$, and $\Delta H_{\text{ads}}\text{Au}(\text{AtOxHy})$ were estimated. The formation of a volatile AtH species in an *in-situ* reaction with atomic hydrogen - being present in trace amounts in the carrier gas - is suggested.

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