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Experimental Evidence for Water Intercalation into Graphite DINKO CHAKAROV, HANS FREDRIKSSON, GUIDO KETTELER, BENGT KASEMO, Department of Applied Physics, Chalmers University — Using different experimental methods we follow the uptake and release of water from highly oriented pyrolytic graphite sample. We found that water can intercalate into graphite following transient binding to defect sites and accumulate in the subsurface regions with concentrations amounting up to 10% of the monolayer. The process is thermally activated and could be manipulated by changing the water vapor pressure or amount of water (ice) on the surface. Photoelectron and vibration spectroscopy data indicate strong perturbance of the intercalated water molecules and lowered barrier for dissociation.

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