Supramolecular structure engineering for fine-tuned optoelectronic properties

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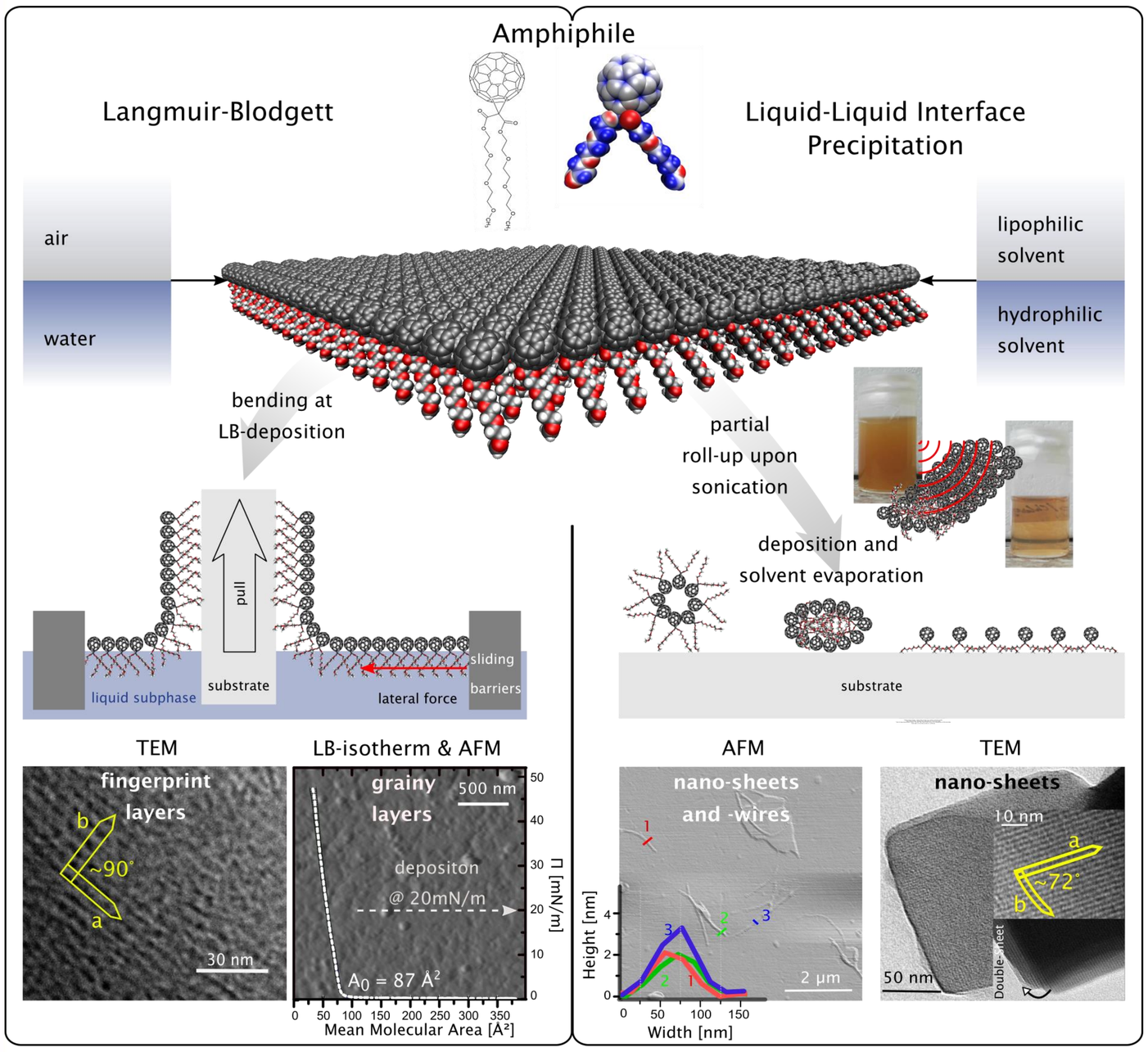
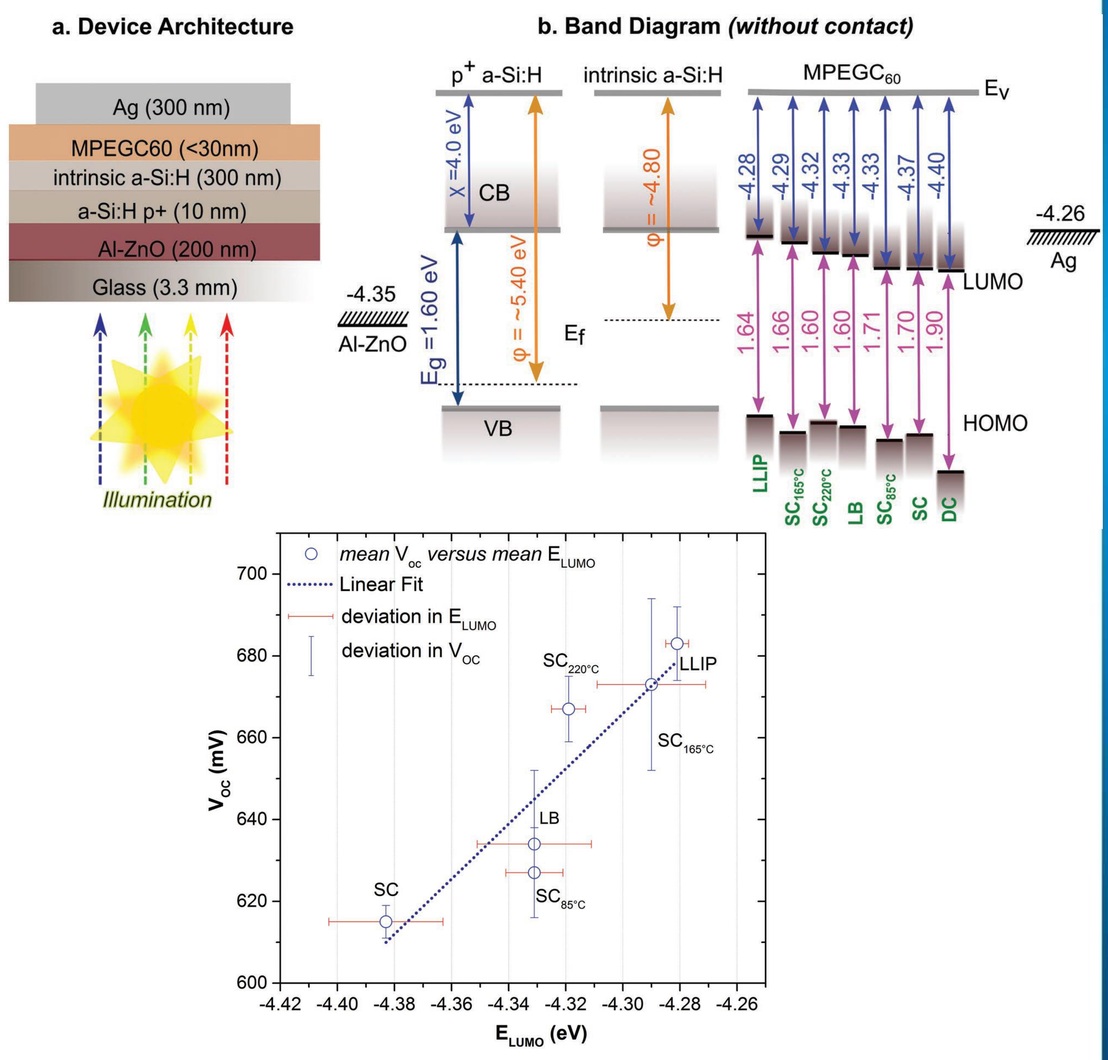
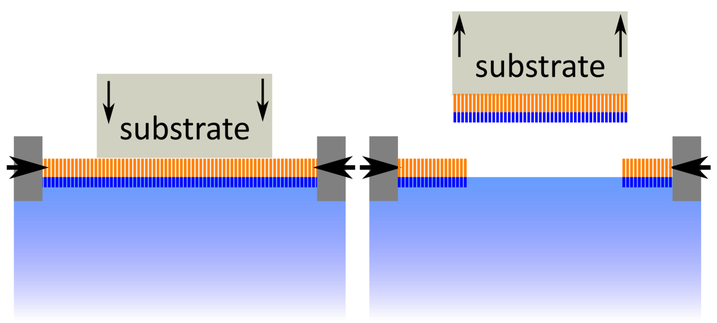


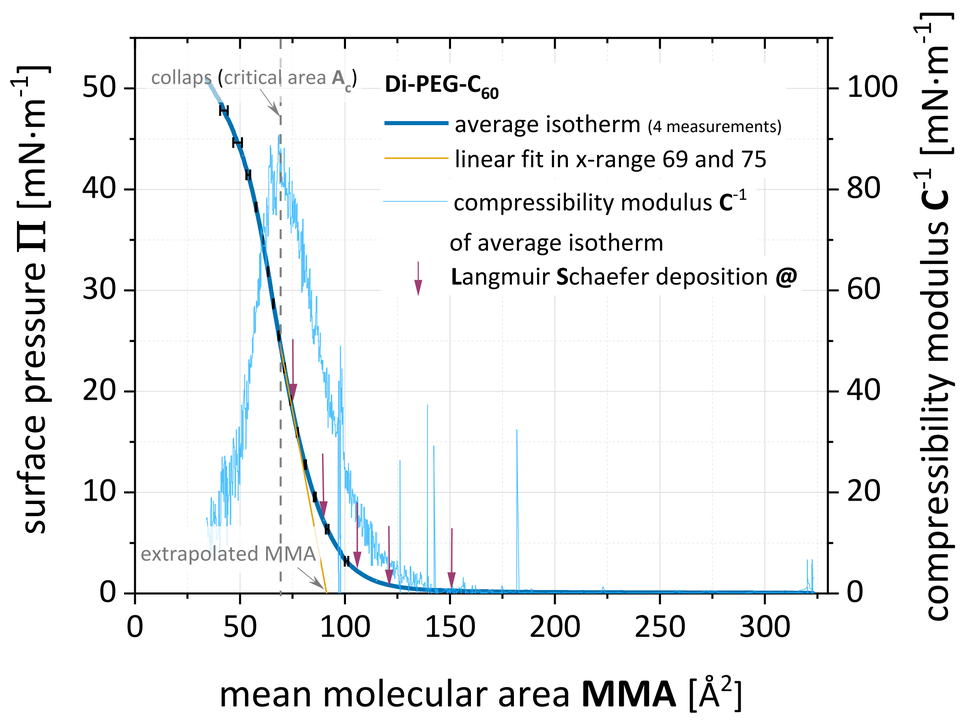
Different thin layer preparation techniques yield to variation in LUMO energy levels and open circuit voltages, the latter when implemented into a hybrid organic solar cell device. These variations are traced back to variations in supramolecular structures to be on hand.

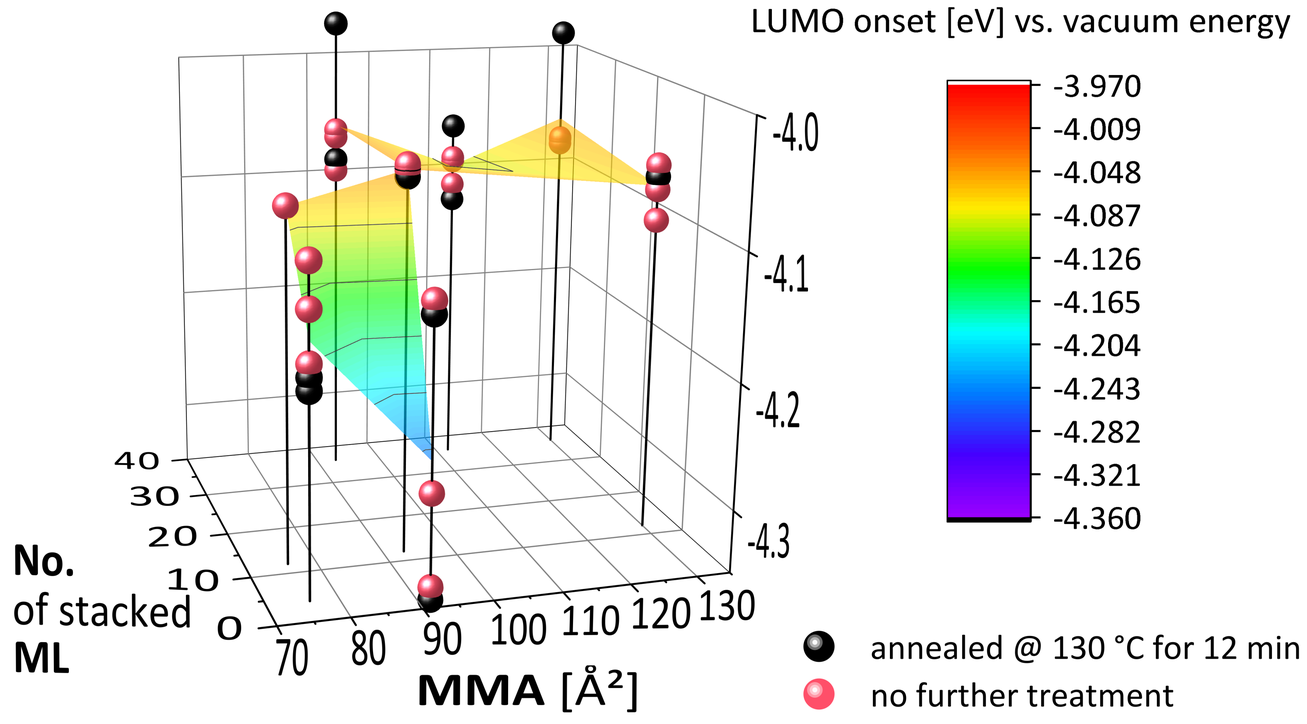


Langmuir-Schaefer



Langmuir-Schaefer **LS** deposition technique enables monolayer **ML** deposition at certain mean molecular areas **MMA.** In case of the amphiphilic Fullerene Di-PEG-C_{60}, which exhibits short PEG-chains (anchor group to water subphase as well as spacer in the Langmuir film itself) LS technique was utilized to vary supramolecular structure in the **ML** and in the stack of deposited **ML** systematically. The **ML** deposition was carried out in very compressed, moderate compressed and rather loosely packing density of the Langmuir film. Optoelectronic properties are further influenced by bulk and surface states, therefore the number of on each other deposited **ML**s was varied, to imitated these conditions. LUMO energy levels were determined by square wave voltammetry **SWV**.





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