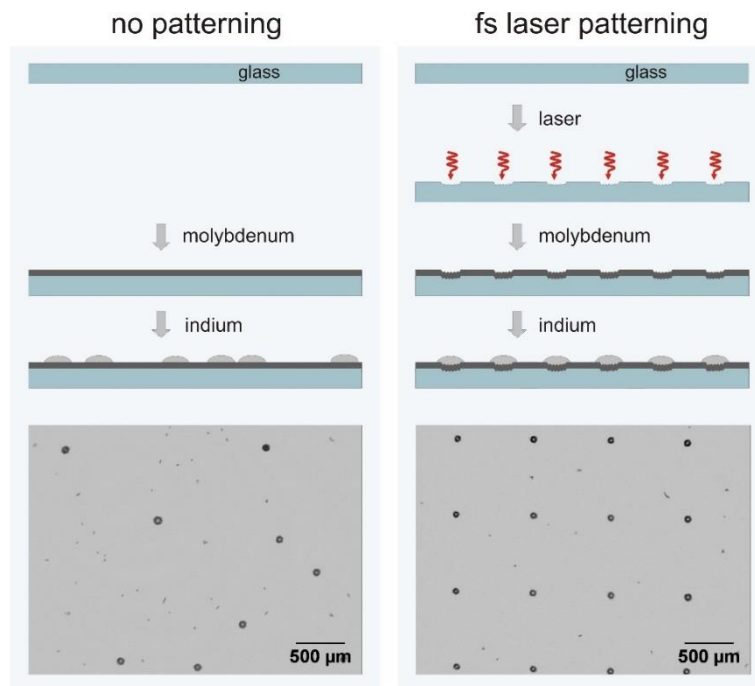


FEMTOSECOND LASER PULSES FOR PHOTOVOLTAIC BOTTOM-UP STRATEGIES

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A bottom-up approach to produce arrays of indium islands on a molybdenum layer on glass using 30-fs laser pulses at 790 nm wavelength is presented. These islands can serve as micro-sized precursors for indium compounds such as copper-indium-gallium-diselenide (CIGSe) used in photovoltaics. Molybdenum is the standard back contact material of CIGSe solar cells. Femtosecond laser ablation of glass and a subsequent deposition of a molybdenum film or direct laser processing of the molybdenum film both allow the preferential nucleation and growth of indium islands at the predefined locations in a following indium-based physical vapor deposition (PVD) process. A proper choice of laser and deposition parameters ensures the controlled growth of indium islands exclusively at the laser ablated spots. Based on a statistical analysis, these results are compared to the non-structured molybdenum surface, leading to randomly grown indium islands after PVD.



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