



Universität
Basel

Research Project

EUROfusion - RG- First Mirror Cleaning

Third-party funded project

Project title EUROfusion - RG- First Mirror Cleaning

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Organisation / Research unit

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Several optical diagnostic systems foreseen in future tokamaks such as ITER but also in stellarators will rely on metallic first mirrors (FMs), enabling light originating from the plasma or probing light sources to travel through the neutron shielding towards detectors. These FMs will experience high particles fluxes (from charge-exchange neutrals, neutrons, and X-ray and gamma radiations) and suffer from erosion and/or deposition. Over the last years, several campaigns took place with first mirrors exposed in tokamaks and highlighted the impact of contaminants re-deposition on optical properties. Based on those results and predictions, it appears that the main concern for FMs is the deposition of material sputtered from the First Wall, i.e. beryllium (Be) and tungsten (W), possibly in an oxide state, strongly affecting their reflectivity and thus their ability to transfer stray light to the diagnostic detectors. In ITER, at least 29 optical diagnostic systems will require suitable in-situ cleaning solutions.

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