Proposal Code : PDF – PlasmaDiag -0001	
Title	Development of formulations for the coatings for Stray light control in Optical Plasma Diagnostics
Abstract	Suitable coatings on the walls of the conduits which houses optical components in the optical plasma diagnostics can help suppress the stray light by minimizing unwanted light scattering and internal reflections, thereby enhancing signal quality and measurement accuracy. Also the transparent coatings on glass windows which can absorb UV and IR radiation are also useful in view port applications in plasma diagnostics and tokamak ports. It is proposed to develop the formulations for such UV and IR absorbing coatings which have good adhesion to a wide range of substrates e.g. Teflon, stainless steel, soft iron etc. and which can be easily applied on the larger areas and complex shaped surfaces. As these coatings are intended to be used on large areas and complex surfaces, the formulations will be developed in house so that coating can be applied by conventional spray technique. A two-step spray process consisting of a prime and functional layer will be utilised. The prime layer provides full coverage and promotes adhesion whereas the functional layer provides the UV absorbing properties. These coatings should also exhibit compatibility with vacuum environments and thermal stability (250^0C), making them suitable for in-vessel components of tokamak sub-systems. The coatings will be tested by exposing them with several hours of UV radiation (280-380 nm). The PDF candidate will develop the formulations for spray coatings to absorb the UV radiation and test the coatings on various substrates like Teflon, SS and Soft Iron. The coated samples will be tested for vacuum compatibility, durability even in hot environment (for mimicking baking), resistance to moisture and will also document the emissivity characterization in the possible spectral range.
Research Focus Areas	Exploration of suitable coating which would help in improving the signal to noise ratio in all the optical diagnostics in which many optical components are housed in long conduits. The existing lab facilities in IPR will be utilized for the development and testing of

	the coatings for stray light suppression.
Qualifications	PhD in Physics / Chemistry
Desired Experience	The PDF candidate should have some hands on knowledge in developing the formulations for spray coatings to absorb the UV & IR radiation and also having experience of testing these coatings in harsh environments along with knowledge of vacuum systems.
Other remarks	Experience in Binders, UV absorbers, IR-absorbers for developing formulations for spray coatings will be an added advantage for candidate