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Flexible High-Energy Optics using Coated Hollow Capillaries

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The guidance of high-energy wave and particle radiation is associated with numerous challenges. This severely limits the possible uses. However, flexible guidance and formation would open up numerous new fields of application.

In this talk, different selected coating technologies like Chemical Vapour Deposition (CVD) in order to coat even complex hollow glass capillaries[2] used as High- Energy Optics are introduced. These different coating methods are discussed intensively for the modification and functionalisation of different hollow glass capillaries with High-Z-metals[2] in order to use them as X-Ray Waveguides e.g. for analytical applications like High- Energy Optics for microanalysis. As High-Z-metals mainly d-block transition metals can be used. For this purpose, special organometallic, elementorganic or coordination compounds[3] mainly of d-block transition metals are decomposed chemically in these capillaries.

Thus, a specific tailored nanostructured surface for the respective applications in Functional Materials can be realized to guide even High- Energy radiation in these hollow capillaries like optical waveguides. To achieve this objective, the right choice precursor material is highly relevant.

These innovative surface coatings, which alter the properties according to the state-of-the-art of uncoated High- Energy Optics significantly, can enable these flexible modified capillaries to boost up their performance for different flexible applications.

In this talk, the latest developments in this exciting research area will be presented and discussed in detail.

Primary author: Prof. WOCHNOWSKI, Jörn Volkher

Presenter: Prof. WOCHNOWSKI, Jörn Volkher

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