We invite applications for a

PhD Student Position

(fare based on german 3/4 E13 TV-L FU) in experimental solid-state physics, limited to three years starting from July 2025. The position is assigned to the workgroup of Prof. W. Kuch, which has experience investigating adsorbed magnetic molecules, surfaces, and nanostructures that may become relevant in a future spin-based electronics. A focus is on the reversible manipulation of the magnetism of adsorbed molecules. Experiments are carried out both by laboratory-based techniques as well as by using synchrotron radiation. We provide excellent conditions for motivated experimentalists. Extensive equipment for X-ray spectroscopy and state-of-the-art surface science analysis tools can be used.

The project consists of research in the field of di- and trinuclear spin-crossover molecules. The goal is to investigate the role of intramolecular coupling and cooperativity in thermal and light-induced spin-switching behavior in order to optimize the latter. Due to the possibility of switching their magnetic moment on and off by external means, spin-crossover molecules are highly interesting candidates for programmable building blocks in molecule-based spin electronics. The use of multinuclear, cooperatively switching molecules can improve switchability on the one hand and achieve a greater switching response on the other.

The position is embedded in a research project funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) as part of the priority program 2491 “Interactive switching of spin states”, which also includes working groups from synthetic chemistry and theoretical physics. In addition to X-ray absorption spectroscopy, synchrotron radiation-based THz spectroscopy is also being used as a new method for characterization. Both bulk materials and thin films on solid surfaces, down to submonolayers, are analyzed. Experiments will be carried out in the university laboratory in Berlin-Dahlem and at the synchrotron-radiation source BESSY II in Berlin-Adlershof.

A master's degree is required with a master thesis in experimental physics or equivalent. We are seeking a motivated candidate with team spirit and ability for independent work. Experience in one or more of the following is of advantage: surface science, ultrahigh vacuum technology, x-ray spectroscopy using synchrotron radiation, electron-paramagnetic resonance spectroscopy or with adsorption of molecules on solid surfaces.

More information can be obtained from Prof. Dr. Wolfgang Kuch, e-mail: magnetism@physik.fu-berlin.de, Tel.: +49-30-838-52098, or at https://www.physik.fu-berlin.de/~ag-kuch.

Applications quoting the reference code **PhyKu_01/25** must include a complete CV, an abstract (max. one page) of the master thesis, as well as names and addresses (postal and e-mail) of two or three persons willing to provide confidential letters of reference. Only complete applications will be considered! Send your applications by e-mail not later than **07. April 2025** to:

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The Freie Universität is an equal opportunity employer. Women are strongly encouraged to apply. Applicants with a disability are given preference in case of equal qualification.