

Position Profile for Chinese Applicants running for 2019 Helmholtz – OCPC – Program

PART A (Info about the Position)

Helmholtz Centre and institute: DESY

Title of the project: **Synthesis and Characterization of Porous mesomorphic organosilica- PMOs**

Project leader: **Dr. Sergio de Souza Funari**

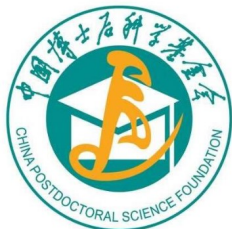
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Description of the project (max. half page):

PMOs and derivatives are promising materials for gas or liquid separation and/or storage. Due to the wide range of synthesis possible, the pursue of the highest efficiency for such uses is still ongoing. In this project we intend to verify the effect on the structure evolution of NaY, an aluminosilicate sol with a composition of $a\text{Na}_2\text{O}-b\text{Al}_2\text{O}_3-\text{SiO}_2-\text{cH}_2\text{O}$, with three sols impregnated with dimethylhexadecyl[3-(trimethoxysilyl)propyl] ammonium chloride (TPHAC) into the aluminosilicate using different $\text{SiO}_2/\text{Al}_2\text{O}_3$ ratios in the formation of the zeolite sol

We shall study these materials using FT-IR, XRD, SEM, TEM and synchrotron radiation small-and-wide angle X-ray scattering (SAXS-WAXS). With this combination of analytical methods we hope to get insight into the mechanism of the nucleation process, the final particle size and shape, the pore diameter and the overall crystallographic structure and lattice size of the crystals formed. Additionally we want see the effects on the time necessary for the chemical reaction to take place.



Upon the results obtained we shall proceed with the project to investigate the formation of PMOs using nonionic surfactants with long polar head groups. We can expect a longer leg time for the formation of the zeolite, however with significant smaller dispersity for the pore size.

Required qualification of the post-doc:

- PhD in Physics or Chemistry.
- Experience with Working in synthesis on a chemistry lab, FT-IR and SAXS.
- Additional skills in Good English read and writing: ability to both work independently and interacting constructively in a group.