



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

### **PART A (Info about the Position)**

**Helmholtz Centre and institute:** DESY, Photon Science

**Title of the project:** Investigation on the stereocomplexation of racemic poly(lactide) during its crystallization by synchrotron X-ray scattering methods

**Project leader:** Dr. Chen Shen, Dr. Florian Bertram

**Web-address:**

[http://photon-science.desy.de/facilities/petra\\_iii/beamlines/p08\\_highres\\_diffraction](http://photon-science.desy.de/facilities/petra_iii/beamlines/p08_highres_diffraction)

**Description of the project** (max. half page):

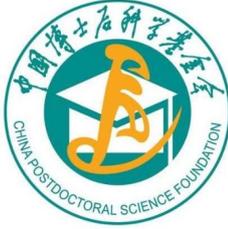
This project aims at resolving the detailed structural and dynamic properties of stereocomplex poly(lactide) (PLA) using X-ray scattering methods. The post-doc will join the team of the High Resolution Diffraction Beamline P08 at PETRA III, the world-leading synchrotron radiation facility at DESY.

PLA is considered as a material for future due to its biodegradability. Stereocomplexation between the two chiral varieties (PLLA and PDLA) can occur during its crystallization. The resulting stereocomplex-crystals (sc-crystals) exhibit higher melting point, faster growth and smaller size as compared to the enantiomeric ones. Recent studies suggest that stereocomplexation also occurs in the molten state. It is assumed that this state in the liquid phase largely affects the formation mechanism of sc-crystals.

Within this project we plan to investigate the details of the PLA stereocomplexation during its crystallization by total scattering and small angle scattering using both X-ray and neutrons, X-ray photon correlation spectroscopy, and quasielastic neutron spectroscopy. The combination of these methods provides the structural and dynamic details at sub-nm length scale and within pico- and micro-second time scales. The finding will contribute to the understanding on the role of backbone chirality in the polymer crystallization.

**Required qualification of the post-doc:**

- PhD in physics, chemistry, materials science or relevant disciplines;
- Experience with polymer synthesis and characterization (e.g. calorimetry, infrared spectroscopy, etc.);
- Additional skills in X-ray scattering methods and/or programming are desirable.

**PART B (Materials and Procedures)**

The applicants shall submit the following documents to a Chinese postdoc station affiliated to a research institution or a university, after passing through the internal selection, the qualified application shall be forwarded to OCPC, and then to Helmholtz for evaluation:

- Detailed description of the interest in joining the project (motivation letter)
- Curriculum vitae, copies of degrees
- List of publications
- 2 letters of recommendation
- Proof of command of English language

**PART C (General Conditions)**

**Additional requirements on the postdoctoral fellows:**

- Chinese citizenship from Mainland China (allows application while staying abroad)
- Max. age of 35 years, PhD degree not more than 5 years by submission of application
- Very good command of English language
- Strong ability to work independently and in a team