

Competition notice

Project title: „Modelling of crystal and magnetic local structure in potential quantum spin liquid (QSL) alpha-RuCl₃”

Principal Investigator: dr hab. Wojciech Sławiński

Project description:

The coupling of properties of materials with their crystal structure is currently one of the main topic of modern crystallography. Finding connections between material's crystal structure, local order and its local distortion and the average structure with chemical and physical properties of the materials is within the scope of interest of many research groups worldwide. One of the intensively studied research areas in the field of magnetic materials is to seek for candidates for Quantum Spin Liquid (QSL) state.

Under the current project we will be developing methods to study local order in materials, i.e. local crystal and magnetic structure of materials within the QSL family. An important part of the project will be to synthesize new materials, next to conduct diffraction experiments by using large scale facilities like synchrotron sources (ESRF France, Diamond UK) or neutron sources (ISIS UK, ILL France). An important part of the project will be to develop available methods for diffraction bases data like *Pair Distribution Function* (this includes computer programming in Fortran) in cooperation with research groups from UK and US.

Requirements (main)

- MSc degree in chemistry, physics or related field,
- practical knowledge of advanced crystallography methods at the MSc level (confirmed by publications if possible) including knowledge of symmetry, X-ray structural analysis).
- experience in crystal structure analysis by using diffraction methods (single and monocrystalline materials) using laboratory X-Ray sources, synchrotron radiation and/or neutrons.
- experience in performing crystallographic measurements
- excellent oral and written knowledge of English
- ability to work within a team

Requirements (additional)

- programming in Fortran, C++ and/or Python
- experience in crystallization
- experience in using Linux/Unix

Discipline: chemical sciences

Admission limit: 1

Recruitment schedule

- registration in the Internet Registration of Candidates, referred to as “IRK”, submitting an application to the IRK: 04 Dec to 18 Dec 2020
- qualification procedure: 21 Dec to 23 Dec 2020
- announcement of the ranking list: to 30 Dec 2020
- accepting documents from qualified candidates: 04 Jan to 27 Jan 2021
- announcement of the list of accepted candidates: to 31 Jan 2021

Recruitment fee

150 PLN

Form of the selection procedure

Evaluation of the following elements shall be taken into account in the selection process:

- 1) scientific activity of the candidate based on a CV or resumé, documented with scans of materials attached to the application for admission to the School;
- 2) interview with the candidate;
- 3) fulfilling of requirements (see above)

Language of the selection process, including the interview

The interview shall be carried out in Polish or English – in accordance with the candidate’s preferences presented in IRK. If the Polish language is selected, the interview may include parts in English.

Required documents

The candidate shall submit the application for admission to the School only in IRK. It shall include:

- 1) the application for admission to the Doctoral School;
- 2) scan of a diploma of completion of the long-cycle Master’s degree programme or second-cycle programme or an equivalent diploma obtained under separate regulations or –in the case of candidates pursuing education within the European Higher Education Areas –a declaration that the diploma or certificate of obtaining a Master’s degree shall be provided by 27 January 2021, in the case of holding a diploma equivalent to the diploma of completion of the long-cycle Master’s degree programme or second-cycle programme, the candidate shall justify this equivalence;
- 3) a resumé or curriculum vitae containing information about scientific activities, including scientific interests and scientific achievements during five calendar years preceding the submission of the application, subject to § 18 s. 5, in particular publications, research and organisational work in scientific associations, participation in scientific conferences, participation in research projects, awards, distinctions, research internships, completed training courses on research skills, science popularisation activities, activities in bodies representing scientific societies, professional career;

- 4) scans of materials confirming scientific activities referred to in the resumé or CV;
- 5) a document confirming the command of English at least at B2 level or declaration about the command of English to the extent enabling the education in the school;
- 6) a scan of the declaration of the supervisor candidate about their willingness to be the candidate's supervisor and the number of doctoral students, for whom they are appointed as the supervisor, in accordance with the template determined by the Rector; additionally, the candidate can enclose a scan of the opinion of the supervisor candidate and opinions of other academic staff on the candidate and their scientific activities or the proposed research project;
- 7) one photograph of the candidate's face, allowing their identification;
- 8) declaration whether the candidate is or was a doctoral student or participant of doctoral studies, and if yes – title of doctoral dissertation or the research project prepared by the candidate, as well as first name and surname of the academic tutor or the supervisor;
- 9) declaration on familiarising themselves with the content of the Resolution, as well as Article 40 and Article 41 of the Code of Administrative Procedure;
- 10) scans of transcripts of records of the first and second cycle programmes, the long-cycle Master's degree programme or equivalent documents (e.g. diploma supplement);
- 11) abstract of the master's thesis or draft master's thesis in English (up to 3,000 characters with spaces);

Evaluation criteria

- the candidate's research achievements, including publications in academic press/ journals (weighting: 50%):
 - 4 points – outstanding achievements of the candidate
 - 3 points – very good achievements of the candidate
 - 2 points – good achievements of the candidate
 - 1 point – poor achievements of the candidate
 - 0 points – the candidate has no achievements
- awards resulting from conducting research, scholarships, prizes and research experience gained outside the candidate's research unit at home or abroad, research workshops and training attended, participation in research projects (weighting: 20%):
 - 4 points – outstanding achievements (among others: scholarships in leading research centres outside of Poland, prestigious international prizes and awards, workshops or training in leading research centres, participation in Polish or international research projects);
 - 3 points – substantial achievements of the candidate (scholarships in good research centres outside of Poland, national prizes and awards, workshops or training attended in research centres at home or abroad, participation in Polish or international research projects);
 - 2 points – moderate achievements of the candidate (local prizes and awards, attended workshops and training, participation in the candidate's university's research projects);
 - 1 point – poor achievements of the candidate;
 - 0 points – the candidate has no achievements.
- candidate's competence as regards specific tasks in the research project (weighting: 30%)
 - 3 points – very good;
 - 2 points – good;
 - 1 point – poor competence;

0 points – no competence.

Education program

The education lasts 4 years. It includes obligatory classes (no more than 300 hours in total during the whole period of education) and the implementation of an individual research program, carried out under the supervision of a supervisor. Beginning of education - March 1, 2021.

Scholarships

The scholarship is PLN 4500 gross-gross (for the duration of the research project). After its completion, PhD student receives a scholarship in the amount provided for in the general regulations.