EUROPEAN COMMISSION
DIRECTORATE-GENERAL HUMAN RESOURCES AND SECURITY
Directorate HR.AMC –Account management Centre
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Project sheet reference n° 2019-KRU-G-000-012188	**Modelling of Isotope Separation by irradiation (M-Iso-Sep)**

Position for: trainee	As the science and knowledge service of the Commission, the mission of DG Joint Research Centre is to support EU policies with independent evidence throughout the whole policy cycle. The JRC is located in 5 Member States (Belgium, Germany, Italy, the Netherlands and Spain). Further information is available at: http://www.jrc.ec.europa.eu **Short description of activity:** The Proof-of-Concept project M-Iso-Sep is aimed at developing a novel process for the production of the medical isotope Mo-99 by neutron irradiation of Mo-100. The Mo-100 target will be prepared as a nanoparticle solution, which will allow the products to be released into the solution by the reaction recoil. The trainee will support the project under the supervision of a mentor/traineeship adviser. The traineeship collaboration consist in two parts: (1) a bibliographical study and (2) supporting laboratory experiments; both connected to the influence of irradiation on the particle size of nanoparticles in solution. (1) The trainee will research existing theoretical and experimental literature on the behaviour of nanoparticles under irradiation by neutrons and/or protons around 10-20 MeV energy. (2) The trainee will help assessing the particle size distribution of nanoparticle solutions by using a combination of experimental techniques. First, a transmission electron microscope (TEM) will be employed. The results will be compared with a Zetasizer device. This instrument measures particle size and molecular weight using dynamic and static light scattering. In any case, the particle size distribution of a pristine sample will be assessed. Time permitting, the change of the particle size distribution as a result of irradiation by fast (~15 MeV) neutrons will be measured. A project report to be written by the trainee will comprise both the results of the

	bibliographical study and the outcome of the experimental assessments. **Qualifications:** The trainee is expected to have at least a B.Sc. (or equivalent) degree in materials science, physics or similar. Experience with nanoparticle synthesis and characterisation would be an asset. The ability to work in an international environment is needed. English B2 level is required. The trainee will receive training by specialists on radioprotection rules to access the controlled area and on the use of the Zetasizer instrument. **For general eligibility requirements, please read the rules governing the traineeship scheme of the JRC:** https://ec.europa.eu/jrc/en/working-with-us/jobs/temporary-positions/jrc-trainees
Directorate **Unit**	G.I.5 – Advanced Nuclear Knowledge Directorate G – Nuclear Safety and Security Further information: https://ec.europa.eu/jrc/en
Indicative duration **Preferred starting date**	5 months January 2020
JRC Site **Country**	Karlsruhe Germany
JRC contact details	**For any technical problems with your application, please contact:** hr-amc8-recruitment-tools-support@ec.europa.eu