

Analysis into electrolytic decomposition of Hydroxylammonium nitrate (HAN)/nanoparticle solutions

Code: 19/27

Company: University of Huddersfield

Location: Huddersfield, UK

Company Description:

The University of Huddersfield was established in 1992, but originated from a number of institutions in Yorkshire dating back to 175 years ago, Huddersfield Scientific and Mechanics' Institute. The university has seven academic schools, with around 1,100 academic staff. The student population is over 20,000 with approximately 4,200 postgraduates.

Project Description:

In this project, the HAN solution will be synthesised by titration between nitric acid and hydroxylamine. Nanoparticles of several oxidation states will be added into the solution according to appropriate percentage.

HAN/nanoparticle solutions will be connected to electrical power for electrolytic decomposition. Parameters such as solution temperature, electrical current, pH change and gases released will be monitored throughout the process. The residuals of the decomposition will be analysed in XRD and SEM as this will help to identify the role of the nanoparticles in the solutions. In addition, the solutions will also be investigated in TGA so that the phenomena of electrolytic decomposition can be benchmarked with well-established thermal decomposition. The damage on the electrodes will also be analysed in XRD and SEM to identify degree of corrosion.

Applicant Specification:

- Currently undertaking undergraduate level chemistry or relevant studies
- Ability to carry out chemical synthesis independently
- Ability to carry out analytical equipment such as TGA, XRD and interpreting experimental data
- Effective report-writing skills

Minimum Requirements:

- Undergraduate chemistry study
- Knowledge in analytical equipment such as TGA, XRD and etc.

Further details:

8 weeks minimum fixed term contract to be agreed with successful candidate but nominally with a start date around 17th June, 2019 to attend the SPIN Induction day at the Satellite Applications Catapult, and completion before 20th September for the Showcase the following week. Salary is £1,280 per calendar month gross.

Equality and Diversity:

The University of Huddersfield is committed to meeting its obligations under the Equality Act 2010 and the Public Sector Equality Duties as a minimum.

In addition, we embrace and celebrate the diversity of our staff, students and applicants and work to ensure University policies, practices, procedures and projects are inclusive.

We are committed to eliminating discrimination, advancing equality of opportunity and fostering good relations on the basis of the protected characteristics; age, disability, gender reassignment, marriage and civil partnerships, pregnancy and maternity, race, religion or belief, sex and sexual orientation and to ensuring equality of opportunity for all.

Closing Date for Applications: 5pm on Friday 31 May 2019

Applications should be made through the online form attaching a CV, before the closing date. Please note that elements of the form left incomplete will be deemed to render the application ineligible. They will be checked for eligibility and forwarded to the employer.