

CheMoocs

Chemometric framework for near infrared spectroscopy development including: toolboxes + MOOCs + training databases

ABSTRACT

Developments in analytical tools are leading to new and more numerous applications. This is particularly the case for near infrared spectroscopy, where compact, robust, portable instruments are used on-line and in the field. A measurement on a sample gives a spectrum or a hyperspectral image, which must be linked to the information sought.

Keywords : Sustainability

Year : 2014

Project number : 1401-005

Type of funding : AAP FORMATION

Project type : AAP

Research units in the network : AGAP ITAP MISTEA

Start date : 2015-01-01

End date : 2017-03-31

Flagship project : no

Project leader : Jean-Claude Boulet

Project leader's institution : INRA-INRAE

Project leader's RU : SPO

Budget allocated : 200000 €

Total budget allocated (including co-financing) : 200000 €

Funding : Labex

GOAL

Chemometrics is used to predict information about samples from their spectra. This information can be, for example, the sugar content of a grape berry, the variety of wheat that gave a flour, the grouping of samples into homogeneous batches.

Our objective is to make chemometrics accessible to as many people as possible, free of charge. The mooc gives the keys to understanding the methods, and thus to using and interpreting them correctly. The ChemFlow software allows to put them into practice on a shared database as well as on one's own data.

ACTION

The project is based on three pillars: a mooc, a software and a database.

- The mooc was broadcast on the Fun platform between 12 September 2016 and 25 November 2016.
- The ChemFlow software is available online: <https://vm-chemflow.toulouse.inra.fr>
- A database is available via ChemFlow, or on chemproject.org

RESULTS

- For the first edition in 2016, the mooc totalled 1470 registrants, of which about 20% followed the core curriculum to the end (answering the quizzes) and 127 successfully obtained their certificate of attendance.
- The ChemFlow software had 630 accounts generating 47,000 queries; the daily maximum was 4,720 queries.
- The most motivated learners were able to benefit from a tutoring programme set up and financed by INRA's permanent training programme.

PERSPECTIVES

The objective is to make the project, renamed ChemProject, sustainable.

Funding has already been obtained to re-run the mooc in autumn 2017 with the addition of courses on method validation and prerequisites.

For 2018 and beyond, a development project has been built with significantly more content and more comprehensive learning aids such as enriched documents or peer correction.

Given the interest shown in chemometrics by industrialists, the search for funding is directed towards corporate sponsorship.