

Bottles of fine wine authenticated by ion beams

Arcane*, the unit of technology transfer of the Centre of nuclear studies of Bordeaux Gradignan (CNRS-IN2P3/University Bordeaux 1) has just signed an exclusive contract of co-operation with international fine wine merchant ‘The Antique Wine Company’** with the aim of authenticating the glass of bottles by ion beams.

Following the example of works of art, wine will now be the subject of meticulous chemical analysis in order to verify its authenticity: by dating the wine by measuring its caesium 137 radioactivity levels as well as dating the glass of the bottles of fine wine which can now be closely examined with a particle accelerator. The tests are completely non-destructive and cannot harm the wine or bottle in any way.

The Antique Wine Company, London based specialists in the international business of fine wine, called upon the services of Arcane in order to obtain a way of authenticating some of the 10,000 bottles of vintage wine that the company evaluates for purchase and sale every year. The Antique Wine Company also wishes to offer its clients and others a new service of authentication as part of the company’s cellar management services.

The analysis of these bottles by Arcane consists of the study of radiation X-ray emitted when they are placed under an ion beam produced by the particle accelerator platform called Aifira***. This permits the verification of the age of the bottles as well as the origin and therefore the vintage, without opening the bottle, a little like the signature of an artist on a master painting.

A comparison of the results obtained for the composition of the glass with the certified database already constructed by Arcane is then carried out. This database includes data on the chemical analysis of the glass of 80 bottles of red Bordeaux, from the 19th century to today, notably the great vintages of St Emilion and the Medoc. A key part of the Antique Wine Company’s involvement in the project is to assist Arcane by providing a more extensive selection of authentic ancient vintages to extend the database of reference material.

The authentication is now possible thanks to the complexity of the fabrication process of the glass which has evolved during the course of time and the diversity of the glass production centres which give each bottle a “signature” multi-element characteristic. The analysis by ion beam provides information on the age of the wine by dating the bottle and removes the constraints of the caesium 137 radioactivity technique, which is limited to bottles younger than 1950.

The first phase of the contract**** will be to analyse around 160 bottles provided to The Antique Wine Company by various Grand Cru Chateaux, to augment the existing Arcane database.

In a second phase expected in November 2008, the authentication services will be available on a commercial basis through a dedicated French company Vincert S.A.R.L. (www.vincert.com) that will become independent of The Antique Wine Company.

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* The regional technical workshop of classification by elementary nuclear analysis. Arcane is a service of L'ADERA (Association for the development of teaching and of research in Aquitaine) which signed an agreement of co-operation with CNRS and the University of Bordeaux.

** Background on The Antique Wine Company

Founded 25 years ago by Stephen Williams and based in London,

from the outset, London based The Antique Wine Company

(www.antique-wine.com) has only ever traded in exceptionally fine

wine. Over the years it has constructed some of the greatest wine cellars in chateaux, palaces, wineries, hotels and private residences in Europe, Asia and North America and now has over 17,000 clients in 67 countries. The company is distinguishable by its excellence in fine wine; record breaking fine wine collections and the exceptional fine wine events and experiences it creates. Among its landmark fine wine sales The Antique Wine Company in 2006 sold the most valuable bottle of white wine ever sold, the 1787 Chateau d'Yquem for £55,000.

*** Platform for the interdisciplinary applications of ion beams in the Aquitaine region. To know more:
http://www.in2p3.fr/presse/communiqués/archives/2005/14_inauguration_aifira.htm

This contract was signed for 10 years on 2nd March 2008