

Achievement Standard

Subject Reference	Chemistry 3.2		
Title	Demonstrate understanding of spectroscopic data in chemistry		
Level	3	Credits	3
		Assessment	Internal
Subfield	Science		
Domain	Chemistry		
Status	Registered	Status date	04 December 2012
Planned review date	31 December 2020	Date version published	17 November 2016

This achievement standard involves demonstrating understanding of spectroscopic data in chemistry.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Demonstrate understanding of spectroscopic data in chemistry. 	<ul style="list-style-type: none"> Demonstrate in-depth understanding of spectroscopic data in chemistry. 	<ul style="list-style-type: none"> Demonstrate comprehensive understanding of spectroscopic data in chemistry.

Explanatory Notes

- 1 This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, Level 8. The standard is aligned to the Material World achievement objectives:

Investigate and measure the chemical and physical properties of a range of groups of substances.

Apply knowledge of chemistry to explain aspects of the natural world and how chemistry is used in society to meet needs, resolve issues, and develop new technologies.

It is also related to the material in the *Teaching and Learning Guide for Chemistry*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.

This standard is also derived from *Te Marautanga o Aotearoa*. For details of *Te Marautanga o Aotearoa* achievement objectives to which this standard relates, see the [Papa Whakaako](#) for the relevant learning area.

Procedures outlined in *Safety and Science: a Guidance Manual for New Zealand Schools*, Learning Media, Ministry of Education, 2000, should be followed.

2 *Demonstrate understanding of spectroscopic data* involves:

- identifying discrete aspects of the structure of organic molecules using teacher provided spectroscopic data.

Demonstrate in-depth understanding involves:

- determining the structure of organic molecules using spectroscopic data.

Demonstrate comprehensive understanding involves:

- justifying the structure of organic molecules by integrating spectroscopic data.

3 Spectroscopic data is limited to that collected from mass, infrared (IR) and ^{13}C nuclear magnetic resonance (NMR) spectroscopy.

4 Organic molecules are limited to alkanes, alkenes, alcohols, haloalkanes, amines, aldehydes, ketones, carboxylic acids, amides, acid chlorides and esters.

5 Aspects of structure are limited to molar mass and molecular formulae, functional groups, and the carbon framework including structural isomers.

6 Conditions of Assessment related to this achievement standard can be found at www.tki.org.nz/e/community/ncea/conditions-assessment.php.

Quality Assurance

1 Providers and Industry Training Organisations must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.

2 Organisations with consent to assess and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Consent and Moderation Requirements (CMR) reference

0233