Claims:

1. A method for generating a database for chemical syntheses, the method comprising the steps of:

(i) generating a series of instruction sets for a series of chemical syntheses from the literature, wherein each instruction set is a machine readable and executable universal language for a chemical synthesiser; and

(ii) assembling the series of instructions sets within a database, and making the instruction sets available for access and autonomous execution by a chemical synthesiser; and

(iii) optionally validating an instruction set by performing a chemical synthesis executed under the instruction set and assessing the reaction outcome against the literature reported outcome for the chemical synthesis.

2. The method of claim 1, wherein an instruction set is generated together with analytical data for the synthesis, and wherein the instruction set is made available for access together with the analytical data for access by a chemical synthesiser.

3. The method of claim 1 or claim 2, wherein an instruction set if made available for access together with information for access by a chemical synthesiser, which information may be selected from:

(i) a user ranking of the instruction set;

(ii) the identity of the originator of the instruction set;

(iii) the validation status of an instruction set, and where validated optionally the identity of the validator of the instruction set;

(iv) the access number for the instruction set, which access number is the number of times that instructions set has been viewed or the number of times the instruction set has been provided to a chemical synthesiser for execution, optionally together with a relative ranking of the instructions set amongst a group of instruction sets available from the database; and

(v) variant instruction sets for the chemical synthesis, where a variant instructions set is one in which at least one operation within the instruction set is modified over the instruction set, where a variant instruction set may give rise a reaction outcome for the chemical synthesis that differs from the reaction outcome for the chemical synthesis executed under the instruction set.

4. The method of any one of claims 1 to 3, wherein the instruction sets are made available only to authorised chemical synthesiser.

5. A method for performing a chemical synthesis, the method comprising the steps of:

(i) accessing an instruction set from a database, and providing the instruction set to a chemical synthesiser, where the instruction set is a machine readable and executable universal language for a chemical synthesiser; and

(ii) autonomously executing the instruction set on the chemical synthesiser thereby to perform the chemical synthesis.

6. The method of claim 5, wherein the chemical synthesiser has a reactor, a separator, an evaporator and a purification system.

7. The method of claim 6, wherein the purification system includes a chromatographic separator.

8. The method of any one claims 5 to 8, wherein the result of the chemical synthesis is analysed, and is optionally reported to the database.

9. The method of any one claims 5 to 8, wherein the instruction set is provided to the chemical synthesiser together with analytical data, wherein the analytical data is compared with analytical data that is generated from the chemical synthesis.

10. The method of any one claims 5 to 9, comprising the step of (iii) modifying an operation within the instruction set, and subsequently autonomously executing the modified instruction set on the chemical synthesiser thereby to perform the chemical synthesis, and analytical data that is generated from the chemical synthesis executed under the modified instruction set is compared with the analytical data provided with the instructions.

11. The method of any one claims 5 to 10, wherein the database is generated by the method of any one of claims 1 to 4.