

# Chambers Dictionary of Science and Technology

*General Editor*  
John Lackie

Chambers

CHAMBERS

An imprint of Chambers Harrap Publishers Ltd

7 Hopetoun Crescent

Edinburgh

EH7 4AY

This edition first published by Chambers Harrap Publishers Ltd 2007

© Chambers Harrap Publishers Ltd 2007

Previous edition published in 1999. Previously published in 1995 as *Larousse Dictionary of Science and Technology*. First published as *Chambers's Technical Dictionary* in 1940 by W&R Chambers Ltd (revised 1958, 1971, 1974 and 1984).

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted by any means, electronic, mechanical, photocopying or otherwise, without the prior permission of the publisher.

A CIP catalogue record for this book is available from the British Library.

ISBN-13: 978 0550 100719

Text design by Ken Wilson

Typeset by Macmillan India Ltd

Printed in Italy by Legoprint S.p.A.

predetermined amount of pigmentary material. Can be distinguished from natural stones only by the most careful expert examination. Similarly for synthetic sapphire.

**synthetic sands** (*Eng*) Sands deficient in clay which have been blended with bentonite or other clay-like material to make them suitable for moulding.

**synthetic sapphire** (*Min*) See SYNTHETIC RUBY.

**synthetic spinel** (*Min*) Spinel produced, in a wide variety of fine colours, by the VERNEUIL PROCESS; in chemical and optical characters identical with natural magnesian spinel, it is widely used as a gemstone.

**syntony** (*ElecEng*) See CURRENT RESONANCE.

**synusia** (*BioSci*) A group of plants with similar life form and of the same or unrelated species, occupying a similar habitat, eg woodland herbs.

**syphilid** (*Med*) Any skin affection caused by syphilis. Also *syphilide*, *syphiloderm*, *syphiloderma*.

**syphilis** (*Med*) A contagious venereal disease due to infection with the micro-organism *Spirochaeta pallida* (*Treponema pallidum*); contracted in sexual intercourse, by accidental contact or (by the fetus) from an infected mother.

**syphiloma** (*Med*) A syphilitic tumour. See GUMMA.

**syphon** (*Genrl*) See SIPHON.

**Syrian garnet** (*Min*) A name for ALMANDINE of gemstone quality.

**syringitis** (*Med*) Inflammation of the Eustachian tube.

**syringobulbia** (*Med*) A disease characterized by increase of neuroglia and the presence of cavities in the medulla oblongata, giving rise to such nervous phenomena as paralysis of the palate, pharynx and larynx. See SYRINGOMYELIA.

**syringomyelia** (*Med*) A chronic, progressive disease of the spinal cord in which increase of neuroglia and the formation of irregular cavities cause paralysis and wasting of muscles and loss of skin sensibility to pain and to temperature. See SYRINGOBULBIA.

**syringomyelocoele** (*Med*) A form of spina bifida in which the part protruding through the defective spinal column consists of the greatly distended central canal of the spinal cord.

**syrinx** (*BioSci*) The vocal organs in birds, situated at the posterior end of the trachea. Pl *syringes*. Adj *syringeal*.

**syrinx** (*Med*) A fistula or a fistulous opening.

**syaltic** (*BioSci*) Alternately contracting and dilating; pulsatory, as the movements of the heart. Cf PERISTALTIC. N *syaltic*.

**system** (*BioSci*) (1) Tissues of the same histological structure, eg the osseous system. (2) Tissues and organs uniting in the performance of the same function, eg the digestive system. (3) A method or scheme of classification, eg the *Linnaean system*. (4) A systematic treatise on the animal or plant kingdom, or any part of either. Adj *systematic*.

**system** (*Chem*) A portion of matter, or a group or set of things that forms a complex or connected whole.

**system** (*ElecEng*) General term used to describe: (1) an entire arrangement of equipment, eg the grid system; (2) a collection of standards or definitions, eg SI system; (3) a set or field of technology, eg digital systems.

**system** (*Genrl*) Generally, anything formed of parts placed together or adjusted into a regular or connected whole.

**system** (*Geol*) (1) The chronostratigraphical equivalent of a PERIOD of geological time. (2) The name given to the succession of rocks which were formed during a certain period of geological time, eg *Jurassic system*. (3) The sum of the phases which can be formed from one or more components of minerals under different conditions of temperature, pressure and composition.

**systematic** (*BioSci*) See SYSTEMIC.

**systematic desensitization** (*Psych*) A therapeutic approach to anxiety disorders in which there is exposure to gradually increasing anxiety-provoking stimuli.

**systematic errors** (*CivEng, MathSci*) Errors which are always in the same direction, ie errors which are always positive or always negative. Sometimes known as cumulative errors. In eg calculations such errors can arise by always rounding fives upwards.

**systematics** (*BioSci*) The branch of biology that deals with classification and nomenclature.

**system building** (*Build, CivEng*) Methods designed to increase the speed of construction by preparing component parts of the building in a factory before assembly on site.

**system crash** (*ICT*) Occurs when the operating system is unable to control the computer and human intervention is needed to restart.

**Système International d'Unités** (*Genrl*) See SI UNITS.

**system engineering** (*Space*) A logical process of activities which transforms a set of REQUIREMENTS arising from a specific mission objective into a full description of a system which fulfils the objective in an optimum way. It ensures that all aspects of a project have been considered and integrated into a consistent whole.

**system flowchart** (*ICT*) See DATA FLOWCHART.

**systemic** (*BioSci*) Something distributed throughout the organism, not limited to a particular place. Thus the systemic circulation carries blood to the body as a whole; systemic insecticides are distributed though all the tissues of a plant.

**systemic arch** (*BioSci*) In vertebrates, the main vessel or vessels carrying blood from the heart to the body as a whole.

**systemic lupus erythematosus** (*Med*) A disease of humans characterized by widespread focal degeneration of connective tissue and disseminated lesions in many tissues including skin, joints, kidneys, pleura, peripheral vessels, peripheral nervous system and transient abnormalities of the central nervous system. Numerous auto-antibodies are present in the blood, of which the most constant are anti-nuclear antibodies. The lesions are mainly the result of the deposition of immune complexes. Abbrev *SLE*.

**systemic pesticides** (*Agri*) Pesticides that are translocated from the point of application to other sites where the activity is expressed.

**systems analysis** (*Genrl*) Complete analysis of all phases of activity of an organization, and development of a detailed procedure for all collection, manipulation and evaluation of data associated with the operation of all parts of it.

**systems analysis and design** (*ICT*) Feasibility study of a potential computer involvement and the design of appropriate system to do a job.

**systems analyst** (*ICT*) Person responsible for the analysis of a project to assess its suitability for computer application and who may also design the necessary computer system.

**systems network architecture** (*ICT*) An IBM network standard for DISTRIBUTED PROCESSING systems. It provides communication between terminals and a host computer.

**systems of crystals** (*Crystal*) The seven large divisions into which all crystallizing substances can be placed: cubic, tetragonal, hexagonal, trigonal, orthorhombic, monoclinic, triclinic. This classification is based on the degree of SYMMETRY displayed by the crystals. See panel on CRYSTAL LATTICE.

**systems programmer** (*ICT*) A programmer who writes SYSTEMS SOFTWARE.

**systems software** (*ICT*) The collection of programs that make the computer system usable and control its performance.

**system testing** (*ICT*) The phase of a testing cycle in which an every part of a system is used to carry out the whole set of processes for which it has been designed, in order to evaluate its suitability for purpose.

**System X** (*ICT*) Name given by British Telecom plc to