

MARGHERITA SUPERCHI*

PROPOSTA PER L'INTRODUZIONE DI TERMINI-CHIAVE GEMMOLOGICI NEL THESAURUS DELLE SCIENZE DELLA TERRA

RIASSUNTO. — I termini-chiave sono parole che stanno ad indicare gli argomenti più importanti trattati in una pubblicazione. Questi vocaboli però, per poter essere considerati dei veri termini-chiave devono essere stati codificati.

Da un certo punto di vista essi sono più rappresentativi del titolo e meno rappresentativi del riassunto; in realtà hanno una finalità diversa: permettono di elaborare un vasto schedario internazionale per argomenti. Ciò rende possibile ottenere in breve tempo una informazione bibliografica completa con la semplice ricerca dell'argomento mediante il relativo numero di codice.

La gemmologia fa parte delle scienze della Terra: per questo la soluzione migliore per la schedatura internazionale dei lavori gemmologici è quella di inserire alcuni termini nelle tavole del Thesaurus delle scienze della Terra, utilizzando gli spazi vuoti (quindi assegnando numeri di codice non utilizzati), ovviamente in posizioni pertinenti.

Scopo del presente lavoro è quello di presentare una proposta concreta per l'inserimento della gemmologia nel Thesaurus.

A questo proposito l'Autore ha esaminato l'inquadramento dei concetti nelle diverse tavole del Thesaurus e dal confronto fra tale suddivisione di argomenti e la materia gemmologica è emersa una proposta come segue:

- 1) elenco di termini-chiave presenti nel Thesaurus (sia come parole-chiave sia come sinonimi o equivalenti) utili anche in gemmologia;
- 2) elenco dei termini che bisognerebbe aggiungere, specificando per ciascuno il numero di codice, ossia la posizione nella quale si propone di inserirlo;
- 3) elenco di argomenti gemmologici che possono essere espressi con uno o più dei vocaboli degli elenchi 1 e 2, tenuto conto dell'origine del materiale o del fenomeno descritto.

Riunendo i tre elenchi in un'unica lista alfabetica si ottiene l'indice degli argomenti gemmologici valido sia per schedare i lavori che per disporre queste schedature con criterio unificato.

ABSTRACT. — Key-words of a paper are words which indicate the most important points treated in the paper. But for their use these words should have been internationally codified: only in this case certain terms are really key-words.

From a certain point of view they are more representative than title and less representative than abstract, but in fact codified key-words have a different, very important finality: to tabulate a great number of papers (from all parts of the World) according to their principal subjects. This make it possible to have, at any time, complete information about a subject, searching electronically (through the code number of the subject) for all papers memorized under that code (that is papers in which the argument is taken into consideration).

Gemmology is a science belonging to the Earth's sciences: for this reason the best that gemmologists could do would be to insert some necessary terms in the tables of the Earth's Sciences Thesaurus, using free spaces (that correspond to free code numbers).

* Servizio Pubblico di Controllo per le Pietre Preziose e le Perle della Camera di Commercio di Milano, via Mercanti 2, 20121 Milano.

For this purpose, the Author examined the concepts and divisions of each table of the Thesaurus and prepared the following proposal:

- 1) a list of key-words already present in the Thesaurus (as key-words or as synonyms or equivalents) useful for gemmological papers;
- 2) a list of new gemmological therms that would be useful to add, specifying, for each therm (through it's code number) the position of the tables in which it is proposed to be inserted;
- 3) a list of gemmological therms that can be expressed with one or more of the key-words of the lists 1 and 2, considering the origin of the material or of the effect.

Combining the three lists together in a single alphabetical list the *general index* of gemmological subjects that can be expressed with key-words is obtained.

The finality of this paper is to make it possible to memorize gemmological papers together with other papers of the Earth's sciences and to use the same criteria in the choice of the key-words.

Two years ago we met in Novosibirska and on this occasion we had taken into consideration a paper presented by the same Author in which gemmology was to be considered an academic science and not a branch of mineralogy.

In that paper it was pointed out that gemmology has it's own principles and that our knowledge can be divided into a general part, a descriptive part and a practical part. Moreover, the certification of gems can be considered «applied gemmology». Still in 1978, in the same paper, a proposal had been made for a gemmological museology, in which just cut materials figured and were arranged according to their colour (quantified and expressed in DIN unities).

Looking at our science from this point of view, it's now logical to consider the key-words for the scheduling of our papers.

Key-words of a paper are words which indicate the most important points treated in the paper. But for their use these words should have been internationally codified and just in this case certain therms are really key-words.

Their finality is to schedule papers from all parts of the world according to their principal subjects. This make it possible to have, at any time, a complete information about a subject, searching electronically (trough the code number of the subject) for all papers memorized under that code (that is papers in which the subject is taken into consideration).

Most of you know that «the Bureau de Recherches Géologiques et Minières (BRGM)», «the Centre National de la Recherche Scientifique (CNRS)» and «the Bundesanstalt für Bodenforschung» prepared lists and tables of all therms (or key-words) useful for the scheduling of papers of the Earth's sciences group. These lists and tables form the Thesaurus of the Earth's sciences.

Gemmology belongs to the Earth's sciences, for this reason the best that gemmologists can do regarding this argument is:

- 1st - to make the most possible use of the therms already present in Thesaurus;
- 2nd - to insert some necessary new therms in the tables of Thesaurus using the free spaces (that correspond to free code numbers);
- 3rd - to express the names of some effects and materials with key-words that represent the origin of phenomena or the genetical classification of the material.

In this way we need to add just few therms for gemmology, as we will see considering the three groups cited above.

1st - The therms used in gemmology that are already accepted as key-words and listed below can be found in Thesaurus, either in the tables or on the last pages in two different alphabetical lists: one of the therms of tables, the other of their synonyms and equivalents.

(The code number of each therm is formed by two figures: the first represents the number of the table, from 1 to 46; the second represents the position of the therm in the table, from 00 to 99, obtained joining the units — from 0 to 9 — of the abscisses with the tens — from 00 to 90 — of the ordinates).

abrasive 37-11	fluviatile-environment 42-05
action-of-man 02-05	fossilized wood 41-20
actuogeology 02-39	freshwater-environment 42-16
amber 22-	fulgurit 23-25
amorphous 13-85	Gastropoda 44-
Angiospermae 43-	glass material 37-21
Artiodactyla 44-	Gymnospermae 43-
association 46-04	Hexacoralla 44-
Aves 44-	histology 41-21
Carnivora 44-	hydrothermal 15-22
Cephalopoda 44-	impactite 18-66
Chelonia 44-	inclusion 06-58
chromatography 09-50	infrared-spectrography 09-59
clevage 13-19	jasper 22-
Coelenterata 44-	lacustrine-environment 42-04
colorimetry 09-30	lagoon-environment 42-13
conductivity 05-88	luminescence 09-83
Coniferales 43-	magnetics 30-33
Crustacea 44-	Mammalia 44-
crystal-defect 13-67	marble 19-
crystal-form 13-28	marine-environment 42-31
customs 46-96	market 46-53
dating 17-34	metamict 13-96
decrepitation 09-01	microprobe 09-07
dermal-formations 41-10	microscopy 09-27
diffraction 05-15	minerals (all names of the species) 12-
DTA 09-91	Mollusca 44-
Elephantoidea 44-	monocrystal-diffraction 09-99
epigenesis 14-51	museology (collection) 01-22
exsolution 06-69	new-mineral-data 13-15
fiscality 46-87	pegmatite 14-21
fluorescence 09-85	Pelecypoda 44-

Perissodactyla 44-	specific weight (density) 04-13
pipe 15-73	Suiformes 44-
placer 14-84	surface-defect 13-09
pleochroism (colour) 05-18	syngenesi 14-61
pneumatolysis 15-20	synthesis 13-61
polished section 09-18	tectite 18-25
powder-diffraction 09-98	TGA 09-92
previsional map 14-38	thin section 09-19
quarrying stone 37-37	time-factor 02-14
quartzite 19-	tooth 41-99
radioactivity 30-25	trace-elements (analysis-minors) 06-04
review-article 02-78	transformation 13-33
Ruminantia 44-	twin 13-18
serpentine 12-	Vertebrata 44-
serpentinite 19-	volcanic glass 19-
silicification 23-88	volcanogenic 15-41
skeleton 41-58	

Diamond and turquoise appear in Thesaurus just in table 37 (useful materials) and not in table 12 (systematic mineralogy) in the general list of minerals. But in 1979 these two minerals had been inserted in the general list of minerals. For this reason it would be correct to cancel them from table 37. But in the same way opal (that has not been inserted in the general list) would have to be canceled from table 37; for this reason it appears in the 2nd list of this paper, to be added in the table 12, in the group of silica minerals.

Again in the table 37 appear the therms: precious stone (37-87) and semiprecious stone (37-67) that could be canceled because in gemmology they are not used any more.

A lot of minerals can be used as gems; their gem-quality varieties are a great number, many of them important. For this reason I think it would be correct to unify and schedule all mineral gems by the name of their mineral species: it's not possible to insert all names of varieties used as gem. And to choose just 10 to 15 of them and no others would nowadays be very difficult. On the contrary it would be useful to unify and cancel from table 37 (together with diamond 37-95, turquoise 37-58 and opal 37-68, already considered) also the following 6 varieties:

sapphire (37-96) and ruby (37-97)	= corundum 12-
emerald (37-98) and acquamarine (37-88)	= beryl 12-
amethyst (37-78) and citrine (37-79)	= quartz 12-

The code numbers of the 11 names that it is proposed to cancel would become free and could be used in future for other therms.

2nd - The new therms that it is proposed to add are:

a) in the general list of themes, relative subjects and corresponding tables:

Gemmology Study of physical, electromagnetic and physico-chemical characteristics of materials useful as ornament, originated from mineral, animal and vegetable kingdom. Optical considerations applied to the cut of gems. Identification of treatments to improve the aspect of gems. Description of partly or completely artificial gem materials, of their production methods, their identification and distinction from the natural correspondings. Norms for certification and trade.

b) in 14 tables of Thesaurus (which are 46 in total) the following key-words in the position indicated by respective codes:

anomalous characteristic 02-63	nucleus, for synthesis or cultivation 02-04
artificial gem 37-33	Octocorallia 44-
biology 41	opal 12-
botany 43	optical diffusion 05-27
Cetacea 44-	pearl 41-02
chemical attack 09-43	plastic material 37-20
chemical proof 06-37	quality of gems 45-52
commerce rules 46-54	rare gem 45-53
cultivation of pearls 37-63	reflexion 05-37
cultured pearl 37-54	requested gem 46-64
cut of gems 45-55	roll of doctors 46-89
definition 02-65	roll of technics 46-98
descriptive 02-74	secretion 41-12
gem 37-77	seed 41-17
gem materials factory 37-62	solution growth 13-51
gemmological certificate 02-38	standard 02-46
gemmological treatment 45-66	structure 04-64
general principle 02-66	thermic attack 09-72
Hydrozoa 44-	thermic proof 06-23
internal brillancy 05-39	transparence 05-17
melt growth 13-52	wood 41-30
museological card 01-21	zoology 44

These new therms could be discussed more precisely examining each of the 14 tables in which they have been inserted.

3rd - Gemmological therms that can be expressed with one or more key-words of the 1st and 2nd list are grouped in the following alphabetical list.

These equivalences have been choosed considering the origin of effects and of materials.

- alexandrite effect = colour 05-18
- asterism = optical diffusion 05-27
- aventurine effect = reflexion 05-37
- bibliographic card = review article 02-78
- bone = Mammalia 44- (Ruminantia or Cetacea), skeleton 41-58, actuogeology 02-39
- casque of hornbill = Aves 44-, dermal-formation 41-10, actuogeology 02-39
- cause of colour = colour 05-18
- certification rules = international-cooperation 01-11, gemmological certificate 02-38
- chatoyancy = optical diffusion 05-27
- CIBJO = institution 01-46
- colour distribution = colour 05-18
- colour quantification = colorimetry 09-30
- copal resin = Coniferales 43-, secretion 41-12, actuogeology 02-39
- coral = Coelenterata 44-, skeleton 41-58, actuogeology 02-39
- cultured pearl, only
 - epithelial tissue = cultured pearl 37-54, histology 41-21
 - fire = optical dispersion 05-29
 - hardness anisotropy = hardness 04-05, anisotropy 04-30
- horn = Mammalia 44- (Ruminantia or Perissodactyla), dermal-formation 41-10, actuogeology 02-39
- IDMA = institution 01-46
- interference = diffraction 05-15
- iridescence = diffraction 05-15
- (play of colours)
- ivory = Mammalia 44- (Elephantoidea or Suiformes or Cetacea or Carnivora), tooth 41-99, actuogeology 02-39
- jet = lignite 22-
- lapis-lazuli = feldspathoid 12-, quarrying-stone 37-37
- luster = reflection 05-37
- mother of pearl = Mollusca 44-, skeleton 41-58, actuogeology 02-39
- natural gem = gem 37-77, genesis 02-26
- nucleated cultured pearl = cultured pearl 37-54, nucleus 02-04
- odontolite = phosphate 22-, quarrying-stone 37-37
- opalescence = optical diffusion 05-27
- operculum = Gastropoda 44-, skeleton 41-58, actuogeology 02-39
- « orient » of pearls = pearl 41-02, diffraction 05-15
- phosphorescence = luminescence 09-33
- polymerisation = synthesis 13-61
- pseudopEARL = Invertebrata 44- (or Vertebrata 44-), secretion 41-02, actuogeology 02-39

shell (mollusc shell)	= Mollusca 44-, skeleton 41-58, actuogeology 02-39
silk	= reflexion 05-37
« synthesis » with high pressure and temperature	= transformation 13-33, high-pressure 06-60, high temperature 06-00
synthetic gem	= gem 37-77, synthesis 13-61
tortoise-shell	= Chelonia 44-, dermal-formations 41-10, actuogeology 02-39
transparency to UV-rays	= transparency 05-17, UV-rays 09-78
transparency to X-rays	= transparency 05-17, X-rays 09-88
treated gem	= gem 37-77, gemmological treatments 45-66
vapour phase synthesis	= synthesis 13-61
« vegetable ivory »	= angiospermae 43-, seed 41-17, actuogeology 02-39
« water » of pearls	= pearl 41-02, reflexion 05-37, diffraction 05-15
WFDB	= institution 01-46

Combining the three lists (1st = therms already present in Thesaurus + 2nd = new therms proposed + 3rd = gemmological therms that can be expressed with one or more key-words) in a single alphabetical liste, we will obtain *the general index of gemmological subjects that can be expressed with key-words.*

This proposal has been prepared by one person and, thus, results subjective. It would be therefore advantageous to discuss it with the representatives of other countries in the Working Group on Gem Materials: with their experience in this field I am sure the best will be done for reaching an objective proposal.

This paper must be considered a work on which the group could work and discuss in order to reach briefly the conclusive proposal for our key-words.

REFERENCES

- ANDERSON B.W. (1971) - *Gem testing*. 8th ed., Butterworth & Co. Publ. Ltd., London.
- BRGM, CNRS, BUNDERSANSTALT FÜR BODENFORSCHUNG (1974) - *Thésaurus franco-allemand, Sciences de la Terre*. Bureau National de l'Information Scientifique et Technique.
- CAVENAGO-BIGNAMI MONETA S. (1980) - *Gemmologia*. 4^a ed., Ulrico Hoepli Editore, Milano.
- CAROBBI G. (1971) - *Trattato di Mineralogia*. 3^a ed. riv. e ampl. da BERNARDINI G.P., CAROBBI G., CIPRIANI C., GARAVELLI C., MAZZI F., I e II vol., USES, Firenze.
- CELLETTI M.C., DE GENNIS L. (1960) - *Nel Mondo della Natura, Enciclopedia Motta di Scienze Naturali, Zoologia*. Federico Motta Editore, Milano.
- C.I.E. (1970) - *Vocabulaire International de l'Eclairage*. Bureau Central de la C.I.E., Paris.
- FRONDEL C. (1962) - *Dana's system of Mineralogy. Vol. III: Silica minerals*. John Wiley and Sons, Inc., New York and London.
- KRAUS E.H., SLAWSON C.B. (1969) - *Gems and Gem Materials*. 5th ed., McGraw-Hill Book Co., Inc., New York-London.
- PADOA E. (1963) - *Manuale di Anatomia Comparata dei Vertebrati*. Ed. G. Feltrinelli, Milano.

- POIROT J.P. () - *Element de Gemmologie*. Institut National de Gemmologie, Paris.
- SINKANKAS J. (1974) - *Gemstones & Mineral Data Book*. Winchester Press, New York.
- SMITH G.F.H. (1972) - *Gemstones*. Revised by F.C. PHILLIPS, XIV ed., Chapman and Hall, London.
- SUPERCHI M. (1979) - *La gemmologia come scienza accademica a sè stante, non una parte della mineralogia: principi generali e concetti*. Rend. SIMP, 35 (1), pp. 199-215.
- TONZIG S. (1956) - *Elementi di Botanica*. Vol. II, Casa Editrice Ambrosiana, Milano.
- WEBSTER R. (1970) - *Gems: their sources, descriptions and identification*. 2nd ed., Butterworths, London.