# Clay Minerals, Alteration
# &
# Terry's pH-Temperature Table

**Kaylene Camuti**
**Lantana Exploration Pty Ltd**

**Additional data provided by:**
**Greg Corbett - Corbett Geological Services**
**Jane Harvey, Juli Hugenholtz & Doug Young - ActivEX Limited**

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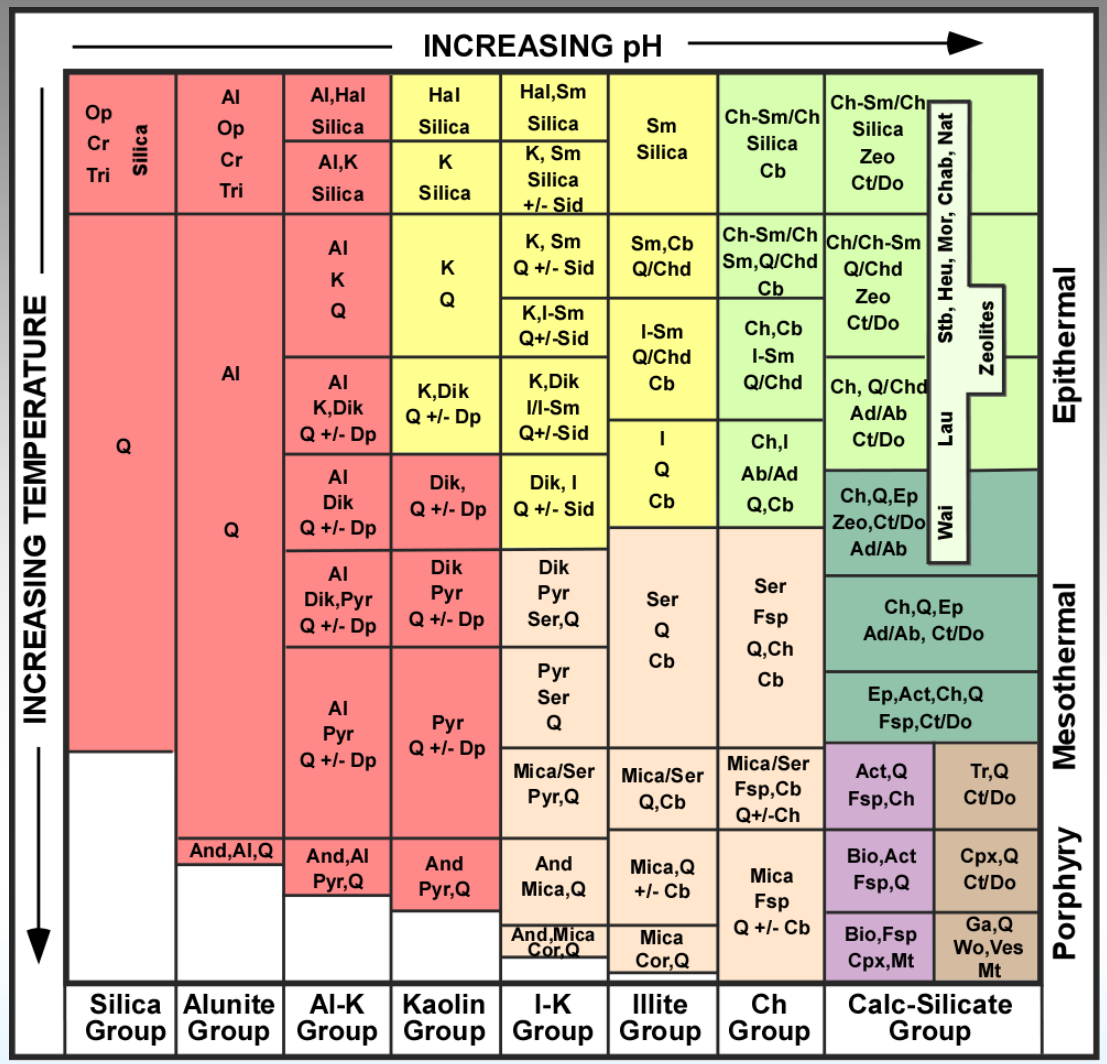
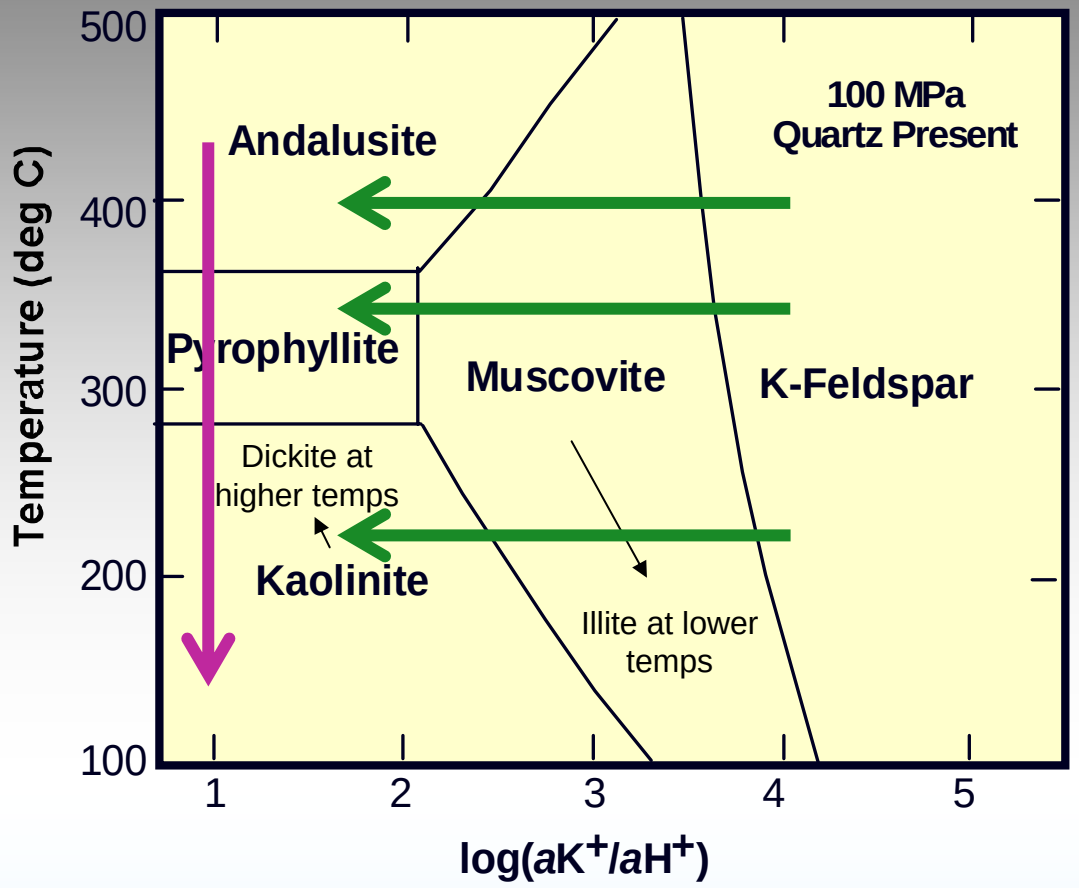
# Common Alteration Mineralogy in Hydrothermal Systems



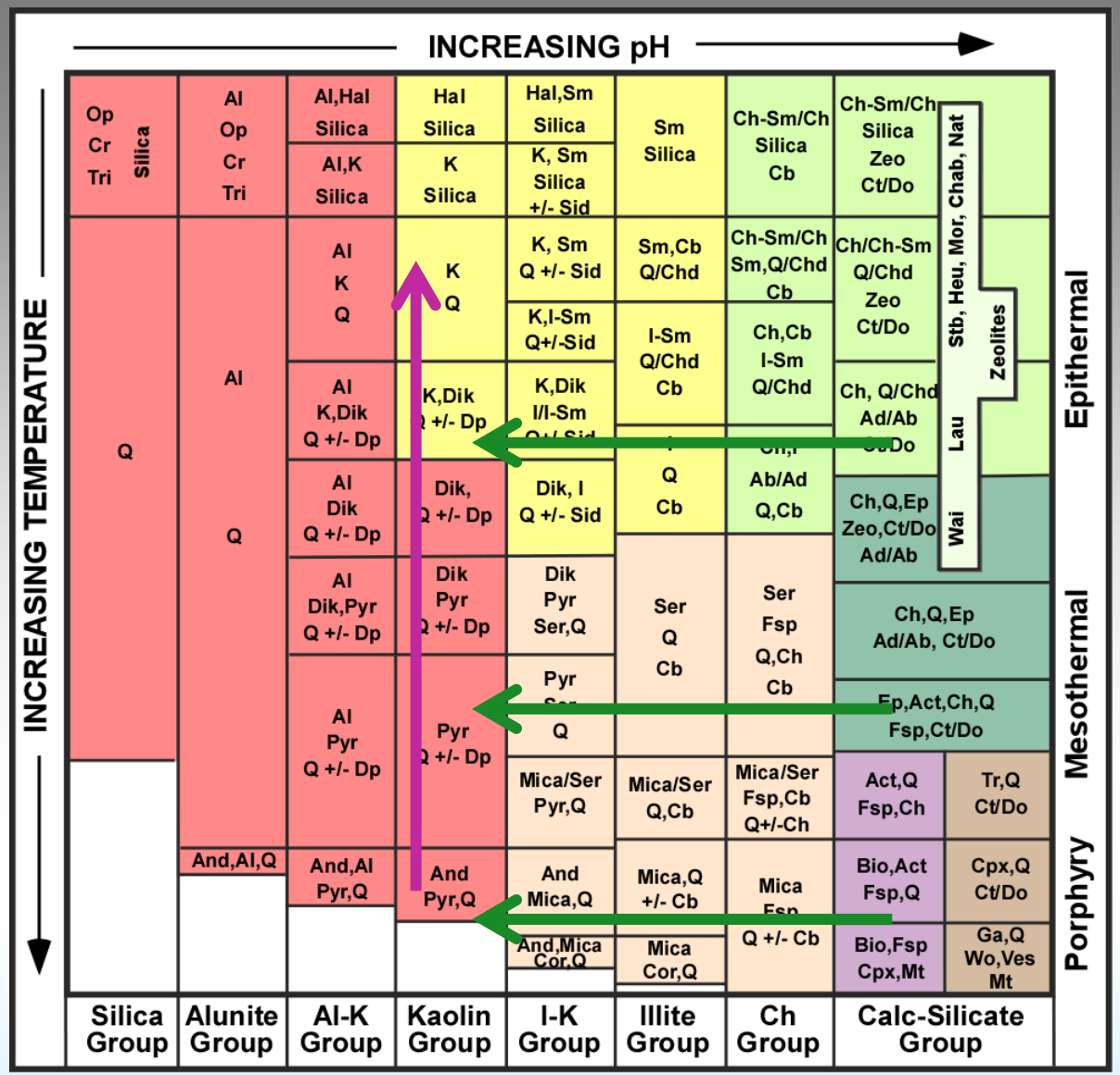

- Skarn
- Potassic
- Propylitic
- Outer Propylitic
- Phyllic
- Argillic
- Advanced Argillic

*Terry Leach 1995*

# Temperature - K activity Diagram




(from Inoue, 1995, after Sverjensky et al., 1991)


INCREASING pH
INCREASING TEMPERATURE
Op
Cr
Tri
Silica
Q
Al
Op
Cr
Tri
Al
Q
And,Al,Q
Al,Hal
Silica
Al,K
Silica
Al
K
Q
Al
K,Dik
Q +/- Dp
Al
Dik
Q +/- Dp
Al
Dik,Pyr
Q +/- Dp
Al
Pyr
Q +/- Dp
And,Al
Pyr,Q
Hal
Silica
K
Silica
K
Q
K,Dik
+/- Dp
Dik,
+/- Dp
Dik
Pyr
+/- Dp
Pyr
+/- Dp
And
Pyr,Q
Hal,Sm
Silica
K, Sm
Silica
+/- Sid
K, Sm
Q +/- Sid
K,I-Sm
Q+/-Sid
K,Dik
I/I-Sm
Dik, I
Q +/- Sid
Dik
Pyr
Ser,Q
Pyr
Q
Mica/Ser
Pyr,Q
And
Mica,Q
And,Mica
Cor,Q
Sm
Silica
Sm,Cb
Q/Chd
I-Sm
Q/Chd
Cb
Q
Cb
Ser
Q
Cb
Mica/Ser
Q,Cb
Mica,Q
+/- Cb
Mica
Cor,Q
Ch-Sm/Ch
Silica
Cb
Ch-Sm/Ch
Sm,Q/Chd
Cb
Ch,Cb
I-Sm
Q/Chd
Ab/Ad
Q,Cb
Ser
Fsp
Q,Ch
Cb
Mica/Ser
Fsp,Cb
Q+/-Ch
Mica
Fsp
Q +/- Cb
Ch-Sm/Ch
Silica
Zeo
Ct/Do
Ch/Ch-Sm
Q/Chd
Zeo
Ct/Do
Ch, Q/Chd
Ad/Ab
Ch,Q,Ep
Zeo,Ct/Do
Ad/Ab
Ch,Q,Ep
Ad/Ab, Ct/Do
Ep,Act,Ch,Q
Fsp,Ct/Do
Act,Q
Fsp,Ch
Bio,Act
Fsp,Q
Bio,Fsp
Cpx,Mt
Tr,Q
Ct/Do
Cpx,Q
Ct/Do
Ga,Q
Wo,Ves
Mt
Stb, Heu, Mor, Chab, Nat
Lau
Wai
Zeolites
Epithermal
Mesothermal
Porphyry
Silica Group
Alunite Group
Al-K Group
Kaolin Group
I-K Group
Illite Group
Ch Group
Calc-Silicate Group

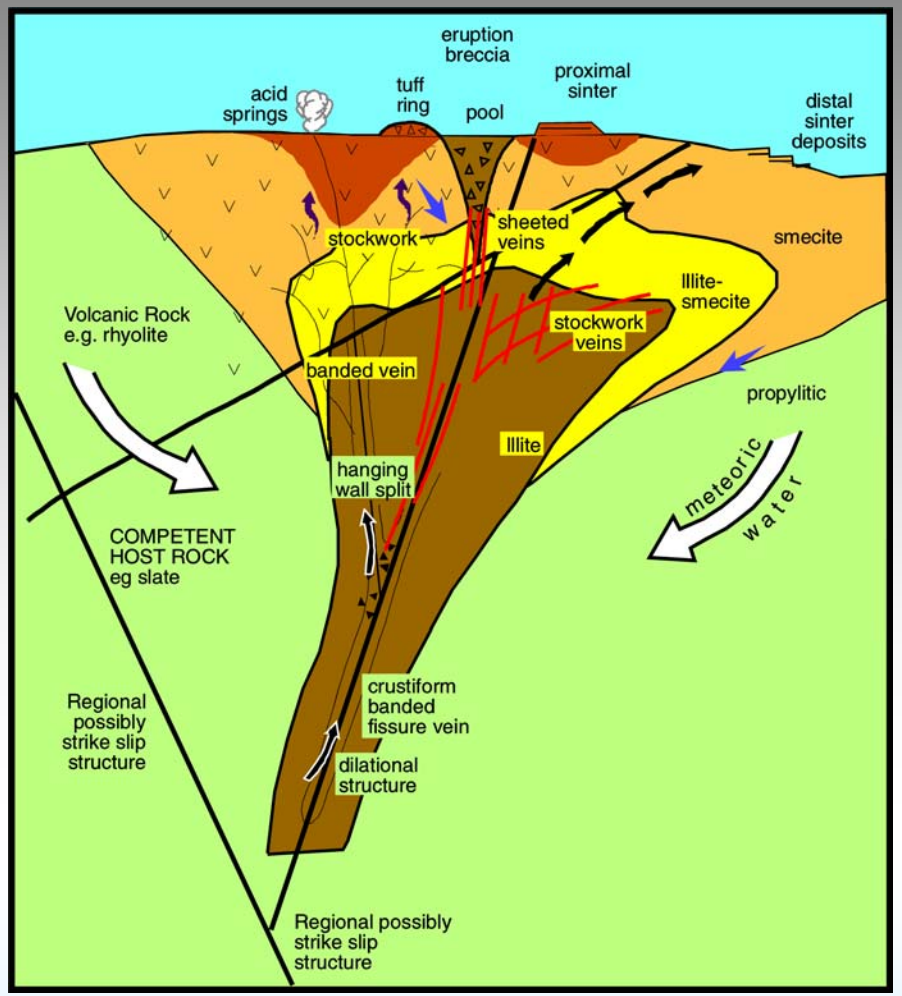
# Outline

- Why identify alteration minerals & assemblages?
- Characteristics of alteration minerals & assemblages illustrated in the pH-temperature table
- Using the table to interpret alteration minerals.

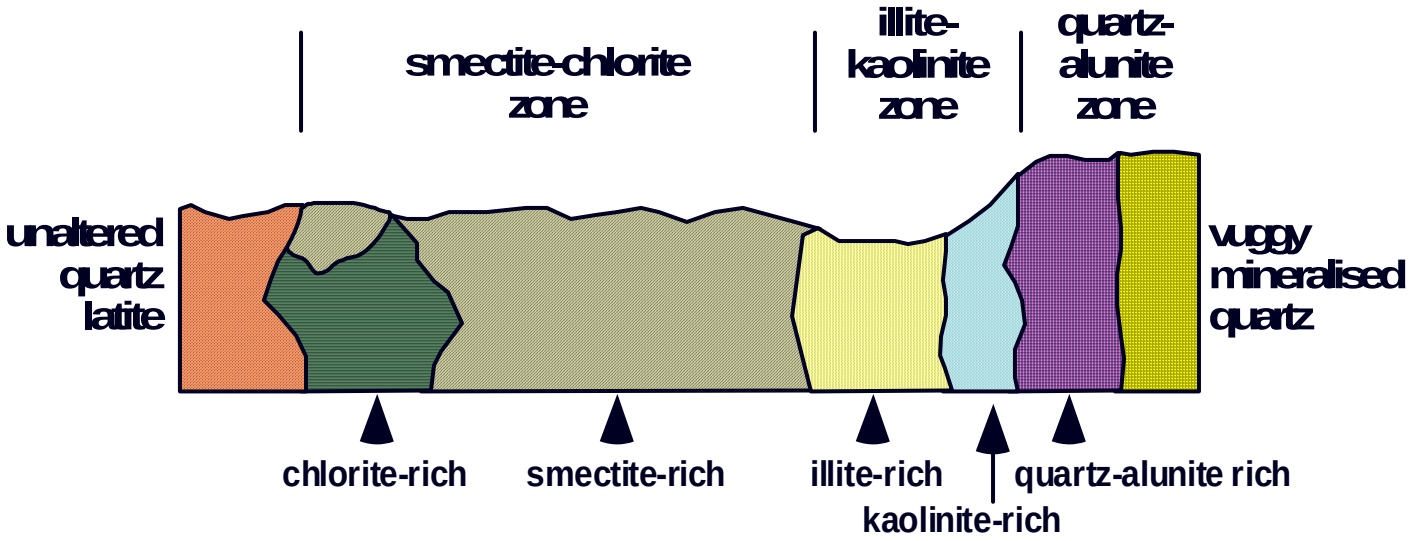
# Why identify alteration minerals?

- The chemistry and structure of alteration minerals are a response to their conditions of formation – so the minerals and mineral assemblages provide information on hydrothermal conditions.
- The minerals typically occur in zones that reflect changing conditions of formation.
- The recognition of alteration mineral zoning can help identify hydrothermal fluid channelways and may provide vectors to mineralisation.

# Low Sulphidation Systems



# High Sulphidation Alteration - Summitville

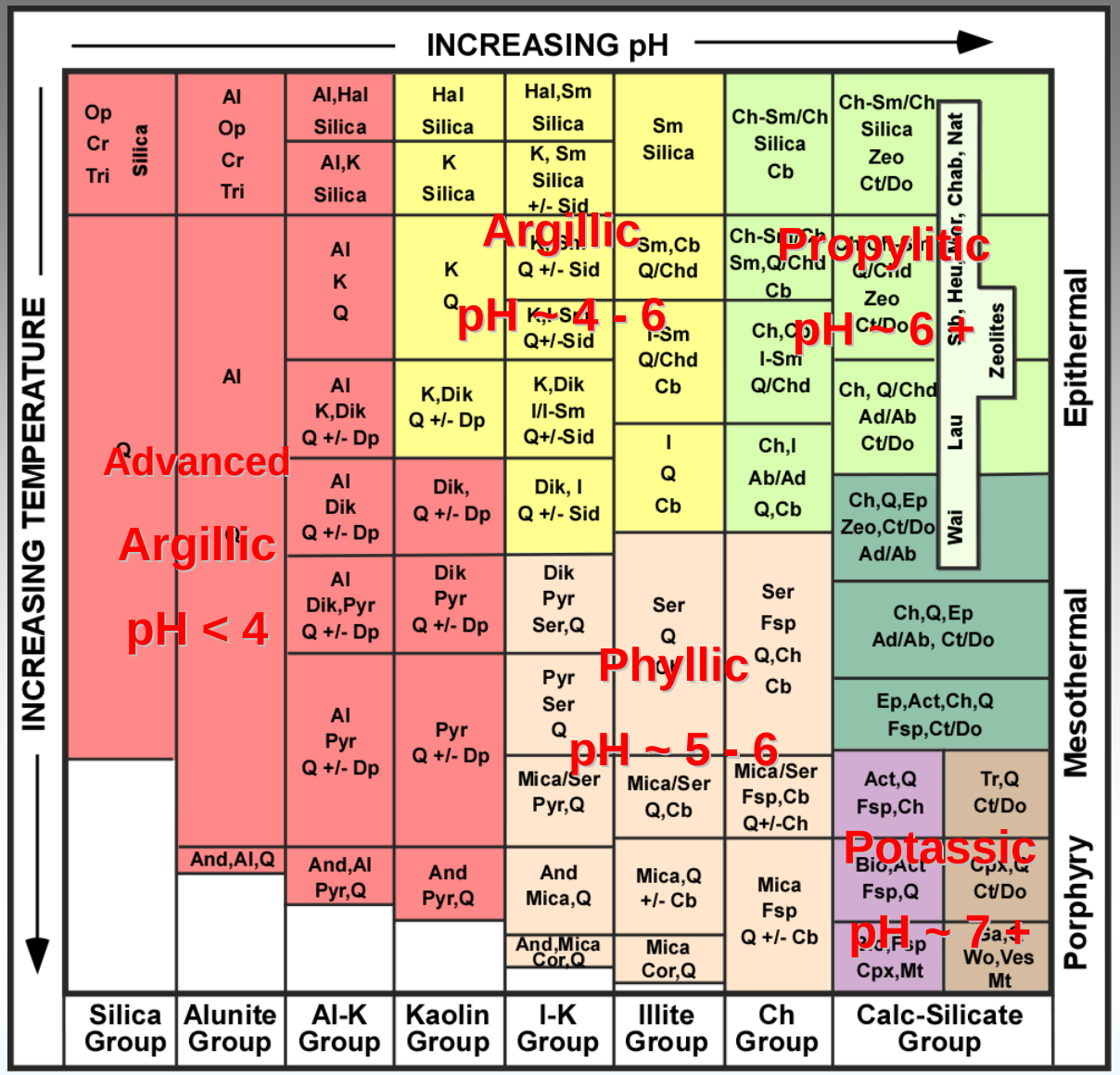



*(adapted from Steven & Ratte, 1960, in Hayba et al., 1985)*

# Characteristic Alteration Minerals & Assemblages

- Some alteration minerals or alteration assemblages are characteristic of particular temperature & fluid pH conditions.

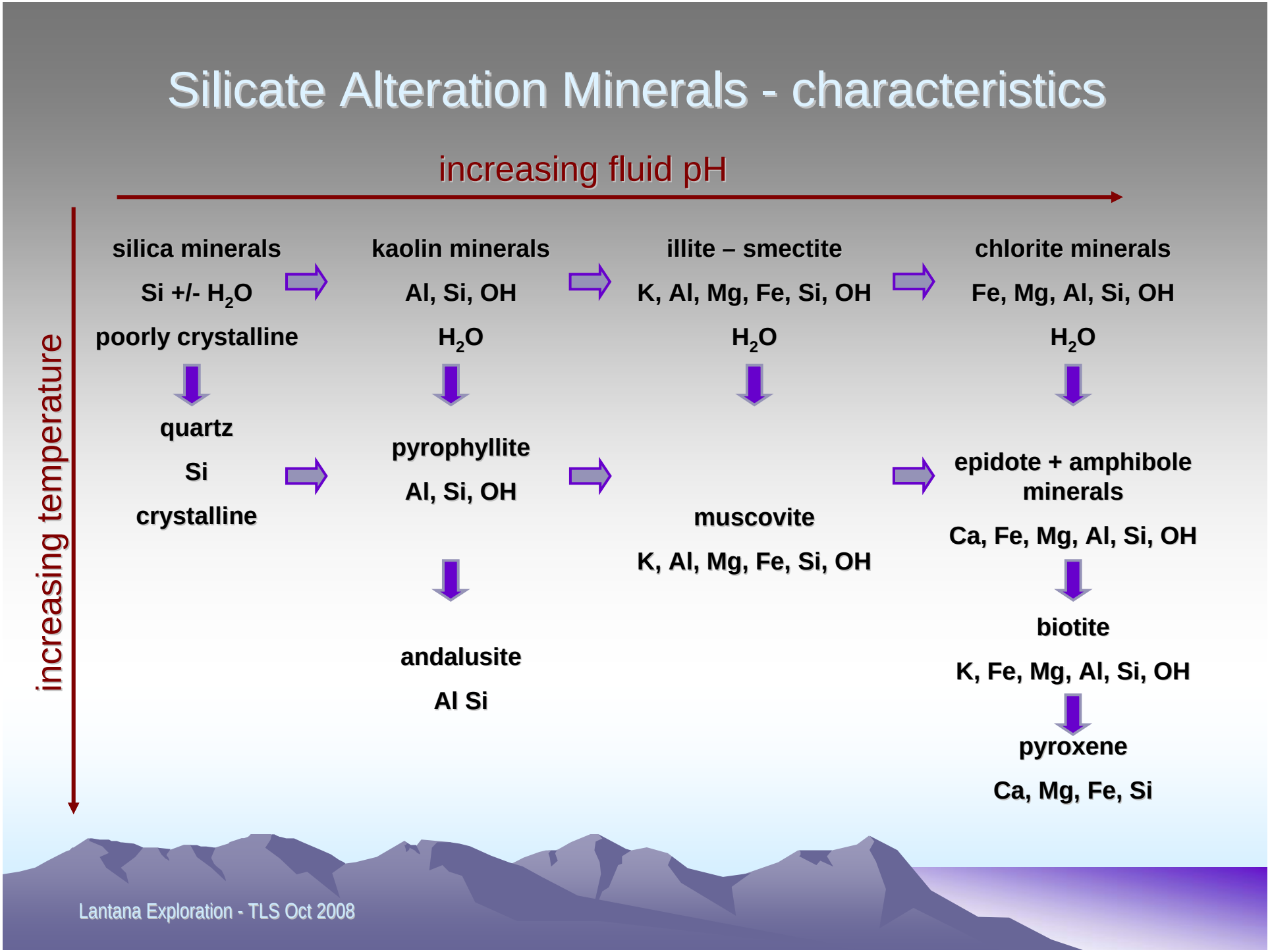
- The pH – temperature table has been subdivided into alteration types with diagnostic mineral assemblages.






*Terry Leach 1995*

# Silicate Alteration Minerals - characteristics



# Using the table to interpret alteration assemblages in mineral exploration

# XRD Summary Results – HS System - table

| Minerals | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
|---|---|---|---|---|---|---|---|
| **Pyrophyllite** | | **major-dom** | **major** | | | | |
| **Kaolin Group** | weak trace ? | trace | minor | | | | trace |
| **Illite** | **major** | **major** | weak trace? | **major** | **trace-minor?** | | **major** |
| **Hydrated Illite** | **major** | | | | | | **major** |
| **ML Illite-Smect** | | | | **major** | **dom** | | |
| **Chlorite** | | | | **major** | | | |
| **Alunite Group** | | trace? | **minor-(major)** | | | | |
| **Quartz** | dom | major-dom | dom | dom | **trace – minor** | **major** | **dom** |
| **Pyrite** | minor | minor | trace | minor | minor | | **minor-major** |
| **Tourmaline** | minor | | | | | | |
| **Rutile** | trace? | | | | trace | | |
| **Feldspars** | trace? | trace? | | **trace - minor** | | | trace? |
| **Diaspore** | | **minor** | | | | | |

# PIMA – list of alteration minerals

| Sample ID | Sample Type | Description | Mineral 1 | Mineral 2 | Mineral 3 |
|---|---|---|---|---|---|
| DB001A | Outcrop | Fine gr'd porphyry? pale brown alteration | Kaolinite | Dickite | |
| DB001B | Outcrop | Fine-gr'd porphyry? very pale alteration, sparse hematite microfractures | Dickite | Kaolinite | |
| DB003A | Outcrop | Very pale clay altered | Dickite | Kaolinite | |
| DB003B | Outcrop | Very pale clay altered | Dickite | Kaolinite | Topaz |
| DB003C | Outcrop | Very pale, clay altered | Dickite | Kaolinite | (trace Topaz) |
| DB004A | Outcrop | Pink porphyry, sericite altered | Sericite | Kaolinite | |
| DB004C | Outcrop | Pink porphyry, sericite altered | Sericite | Kaolinite | |
| DB005A | Outcrop | Felspar Porphyry, east of silica zone, pink with sericite | Sericite | Kaolinite | |
| DB005B | Outcrop | Felspar Porphyry, east of silica zone, pink with sericite | Sericite | | |
| DB006A | Quarry | Very fine-gr'd porphyry, pink | Sericite | Kaolinite | |
| DB006B | Quarry | Pale clay altd volcanic(?) with local ferruginous stain | Kaolinite | (trace Sericite) | |
| DB006C | Quarry | Pale green altd fragmental(?) volcanic | Sericite | Kaolinite | |
| BM1001D | Outcrop | Silicified Qtz porphyry? Pinky-grey with diss hematite spots | Kaolinite | Pyrophyllite | Topaz |
| BM1001E | Outcrop | Qtz Porphyry? Very red, fine-grained siliceous | Alunite | Kaolinite | |
| BM1002A | Outcrop | Fine-gr'd Porphyry? Red alteration (Fine-grained, hard) | Kaolinite | Alunite | Pyrophyllite |
| BM1002B | Outcrop | Fine-gr'd Porphyry? Pink-Red alteration (hard) | Pyrophyllite | Kaolinite | |
| BM1003B | Outcrop | Outcrop at top (v rocky), pale alteration with yell-brown coating | Alunite | Kaolinite | |
| BM1003C | Outcrop | Outcrop at top (v rocky), pale alteration with yell-brown coating | Alunite | Kaolinite | |
| BM1004A | Outcrop | Fine-gr'd Porphyry? Pale grey, fine-grained, hard, with hematite fractures | Smectite | | |

# Drill Log - descriptive

| From | To | Style | Int | Description |
|---|---|---|---|---|
| 21.5 | 24.7 | d | m | Weakly disseminated KFs alteration with locally developed moderate Chl. |
| 24.7 | 32.6 | d | w | Weakly disseminated KFs alteration with locally developed moderate Chl. |
| 39.7 | 40.8 | d | s | Pervasive strong Chl replacing KFs & Hblende |
| 83 | 83.5 | p | i | Strong Chl and Ser - texturally destructive |
| 83.8 | 89.3 | d | s | Strong clay alteration of primary KFs.<br>Local disseminated pink secondary KFs. |
| 153.2 | 160.2 | p | s | Pervasive dark green Chlor alteration. |

# XRD Summary Results – HS System

| Minerals | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
|---|---|---|---|---|---|---|---|
| **Pyrophyllite** | | **major-dom** | **major** | | | | |
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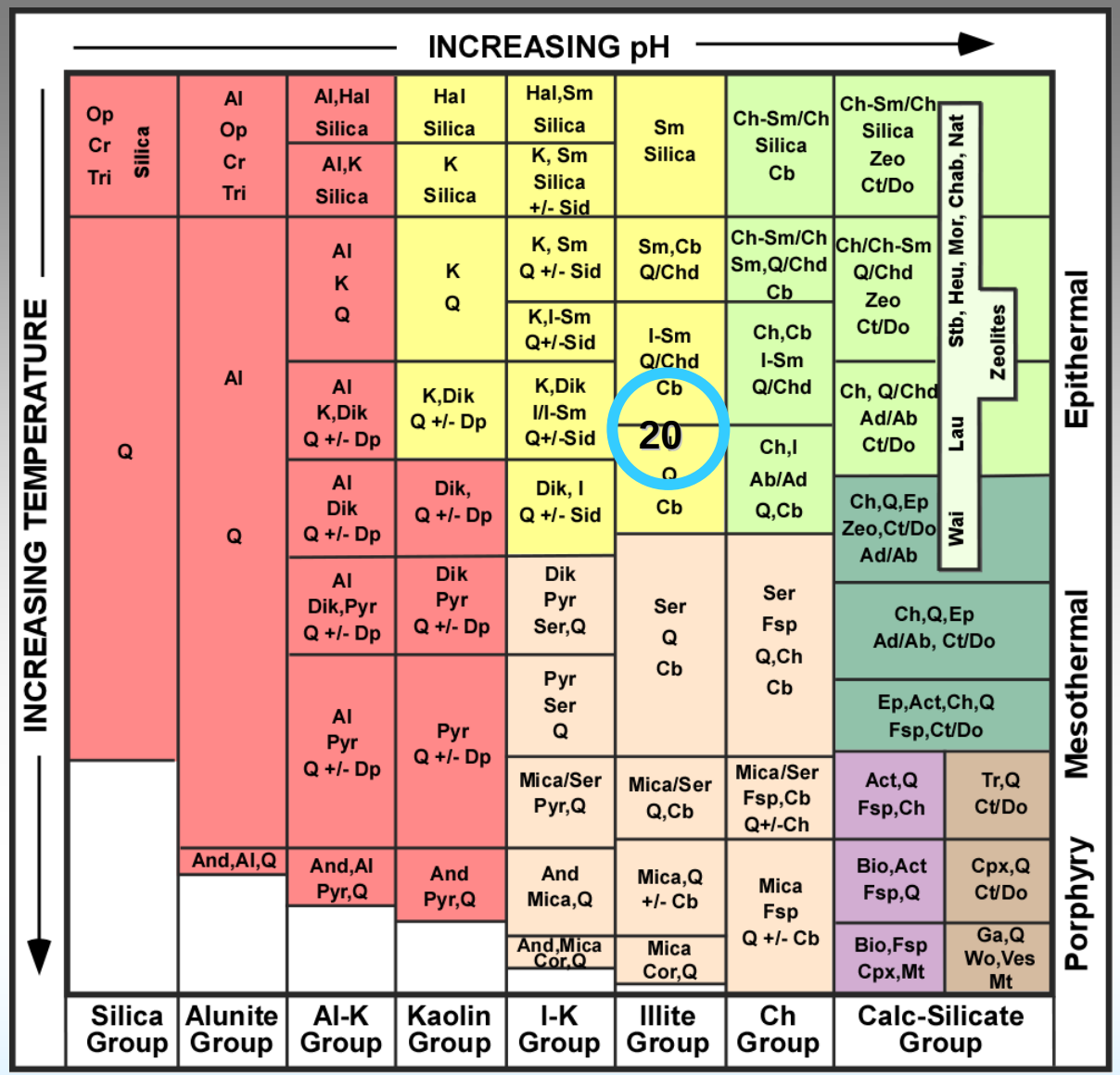
| **Hydrated Illite** | **major** | | | | | | **major** |
| **ML Illite-Smect** | | | | **major** | **dom** | | |
| **Chlorite** | | | | **major** | | | |
| **Alunite Group** | | trace? | **minor-(major)** | | | | |
| **Quartz** | dom | major-dom | dom | dom | **trace – minor** | **major** | **dom** |
| **Pyrite** | minor | minor | trace | minor | minor | | **minor-major** |
| **Tourmaline** | minor | | | | | | |
| **Rutile** | trace? | | | | trace | | |
| **Feldspars** | trace? | trace? | | **trace - minor** | | | trace? |
| **Diaspore** | | **minor** | | | | | |


INCREASING pH
INCREASING TEMPERATURE
Op Cr Tri Silica
Al Op Cr Tri
Al,Hal Silica
Al,K Silica
Hal Silica
K Silica
Hal,Sm Silica
K, Sm Silica +/- Sid
Sm Silica
Ch-Sm/Ch Silica Cb
Ch-Sm/Ch Silica Zeo Ct/Do
Stb, Heu, Mor, Chab, Nat
Zeolites
Lau
Wai
Q
Al
Q
Al K Q
K Q
K, Sm Q +/- Sid
K,I-Sm Q+/-Sid
Sm,Cb Q/Chd
Ch-Sm/Ch Sm,Q/Chd Cb
Ch/Ch-Sm Q/Chd Zeo Ct/Do
Al K,Dik Q +/- Dp
K,Dik Q +/- Dp
K,Dik I/I-Sm Q+/-Sid
I-Sm Q/Chd Cb
Ch,Cb I-Sm Q/Chd
Ch, Q/Chd Ad/Ab Ct/Do
20
Q
Cb
Ch,I Ab/Ad Q,Cb
Al Dik Q +/- Dp
Dik, Q +/- Dp
Dik, I Q +/- Sid
Ch,Q,Ep Zeo,Ct/Do Ad/Ab
Al Dik,Pyr Q +/- Dp
Dik Pyr Q +/- Dp
Dik Pyr Ser,Q
Ser Q Cb
Ser Fsp Q,Ch Cb
Ch,Q,Ep Ad/Ab, Ct/Do
Al Pyr Q +/- Dp
Pyr Q +/- Dp
Pyr Ser Q
Ep,Act,Ch,Q Fsp,Ct/Do
Mica/Ser Pyr,Q
Mica/Ser Q,Cb
Mica/Ser Fsp,Cb Q+/-Ch
Act,Q Fsp,Ch
Tr,Q Ct/Do
And,Al,Q
And,Al Pyr,Q
And Pyr,Q
And Mica,Q
Mica,Q +/- Cb
Mica Fsp Q +/- Cb
Bio,Act Fsp,Q
Cpx,Q Ct/Do
And,Mica Cor,Q
Mica Cor,Q
Bio,Fsp Cpx,Mt
Ga,Q Wo,Ves Mt
Epithermal
Mesothermal
Porphyry
Silica Group
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Al-K Group
Kaolin Group
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Illite Group
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| **ML Illite-Smect** | | | | **major** | **dom** | | |
| **Chlorite** | | | | **major** | | | |
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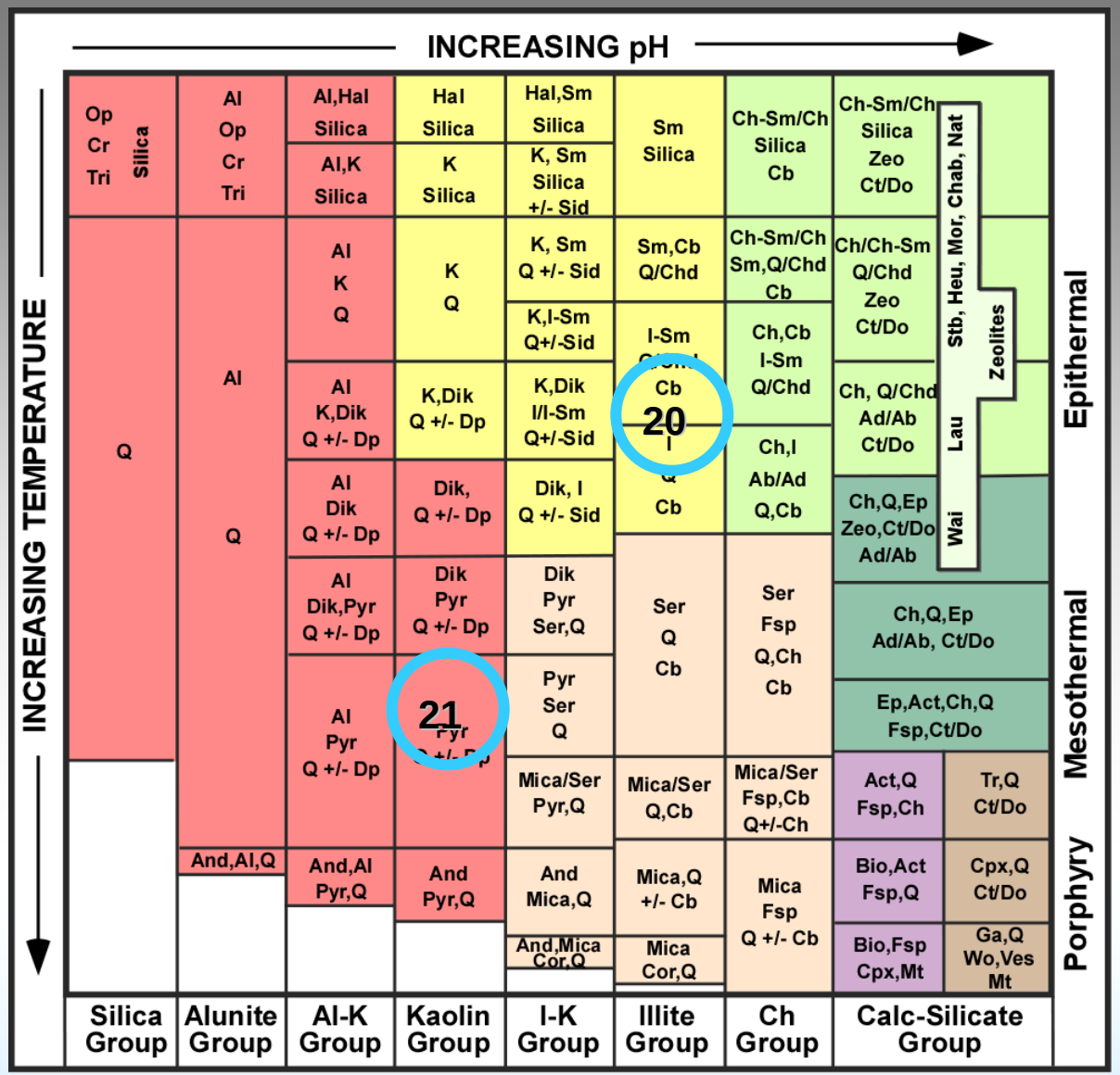
| **Quartz** | dom | major-dom | dom | dom | **trace – minor** | **major** | **dom** |
| **Pyrite** | minor | minor | trace | minor | minor | | **minor-major** |
| **Tourmaline** | minor | | | | | | |
| **Rutile** | trace? | | | | trace | | |
| **Feldspars** | trace? | trace? | | **trace - minor** | | | trace? |
| **Diaspore** | | **minor** | | | | | |


INCREASING pH
INCREASING TEMPERATURE
Epithermal
Mesothermal
Porphyry
Zeolites
Stb, Heu, Mor, Chab, Nat
Lau
Wai
Op Cr Tri Silica
Q
Al Op Cr Tri
Al
Q
And,Al,Q
Al,Hal Silica
Al,K Silica
Al K Q
Al K,Dik Q +/- Dp
Al Dik Q +/- Dp
Al Dik,Pyr Q +/- Dp
Al Pyr Q +/- Dp
And,Al Pyr,Q
Hal Silica
K Silica
K Q
K,Dik Q +/- Dp
Dik, Q +/- Dp
Dik Pyr Q +/- Dp
Pyr
And Pyr,Q
Hal,Sm Silica
K, Sm Silica +/- Sid
K, Sm Q +/- Sid
K,I-Sm Q+/-Sid
K,Dik I/I-Sm Q+/-Sid
Dik, I Q +/- Sid
Dik Pyr Ser,Q
Pyr Ser Q
Mica/Ser Pyr,Q
And Mica,Q
And,Mica Cor,Q
Sm Silica
Sm,Cb Q/Chd
I-Sm
Cb
I
Cb
Ser Q Cb
Mica/Ser Q,Cb
Mica,Q +/- Cb
Mica Cor,Q
Ch-Sm/Ch Silica Cb
Ch-Sm/Ch Sm,Q/Chd Cb
Ch,Cb I-Sm Q/Chd
Ch,I Ab/Ad Q,Cb
Ser Fsp Q,Ch Cb
Mica/Ser Fsp,Cb Q+/-Ch
Mica Fsp Q +/- Cb
Ch-Sm/Ch Silica Zeo Ct/Do
Ch/Ch-Sm Q/Chd Zeo Ct/Do
Ch, Q/Chd Ad/Ab Ct/Do
Ch,Q,Ep Zeo,Ct/Do Ad/Ab
Ch,Q,Ep Ad/Ab, Ct/Do
Ep,Act,Ch,Q Fsp,Ct/Do
Act,Q Fsp,Ch
Tr,Q Ct/Do
Bio,Act Fsp,Q
Cpx,Q Ct/Do
Bio,Fsp Cpx,Mt
Ga,Q Wo,Ves Mt
20
21
Silica Group
Alunite Group
Al-K Group
Kaolin Group
I-K Group
Illite Group
Ch Group
Calc-Silicate Group

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| **Hydrated Illite** | **major** | | | | | | **major** |
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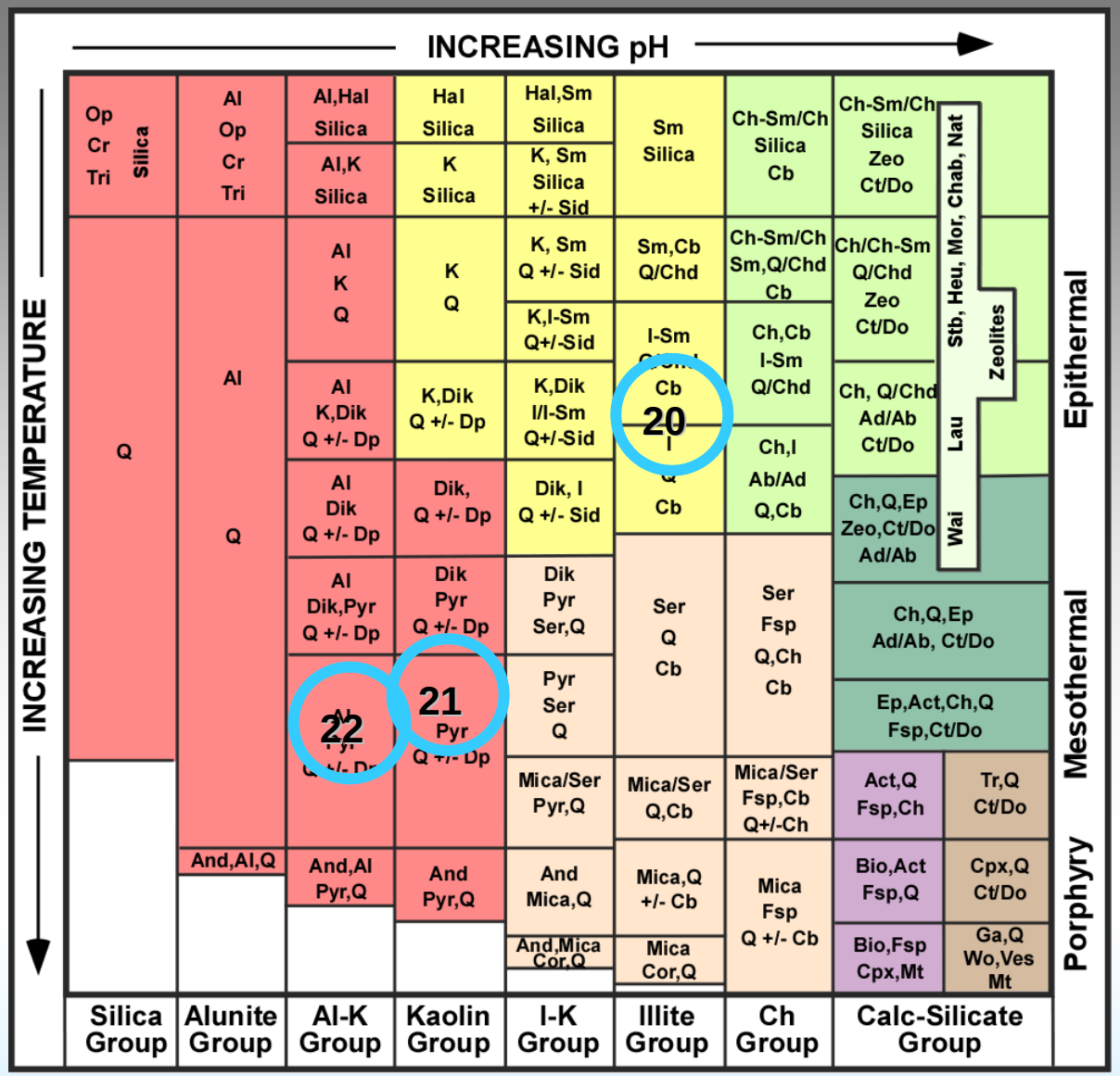
| **Diaspore** | | **minor** | | | | | |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Epithermal
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Q
And,Al,Q
Al,Hal Silica
Al,K Silica
Al K Q
Al K,Dik Q +/- Dp
Al Dik Q +/- Dp
Al Dik,Pyr Q +/- Dp
And,Al Pyr,Q
Hal Silica
K Silica
K Q
K,Dik Q +/- Dp
Dik, Q +/- Dp
Dik Pyr Q +/- Dp
Pyr Q +/- Dp
And Pyr,Q
Hal,Sm Silica
K, Sm Silica +/- Sid
K, Sm Q +/- Sid
K,I-Sm Q+/-Sid
K,Dik I/I-Sm Q+/-Sid
Dik, I Q +/- Sid
Dik Pyr Ser,Q
Pyr Ser Q
Mica/Ser Pyr,Q
And Mica,Q
And,Mica Cor,Q
Sm Silica
Sm,Cb Q/Chd
I-Sm Cb
Cb
Ser Q Cb
Mica/Ser Q,Cb
Mica,Q +/- Cb
Mica Cor,Q
Ch-Sm/Ch Silica Cb
Ch-Sm/Ch Sm,Q/Chd Cb
Ch,Cb I-Sm Q/Chd
Ch,I Ab/Ad Q,Cb
Ser Fsp Q,Ch Cb
Mica/Ser Fsp,Cb Q+/-Ch
Mica Fsp Q +/- Cb
Ch-Sm/Ch Silica Zeo Ct/Do
Ch/Ch-Sm Q/Chd Zeo Ct/Do
Ch, Q/Chd Ad/Ab Ct/Do
Ch,Q,Ep Zeo,Ct/Do Ad/Ab
Ch,Q,Ep Ad/Ab, Ct/Do
Ep,Act,Ch,Q Fsp,Ct/Do
Act,Q Fsp,Ch
Tr,Q Ct/Do
Bio,Act Fsp,Q
Cpx,Q Ct/Do
Bio,Fsp Cpx,Mt
Ga,Q Wo,Ves Mt
20
21
22
Silica Group
Alunite Group
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Kaolin Group
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Ch Group
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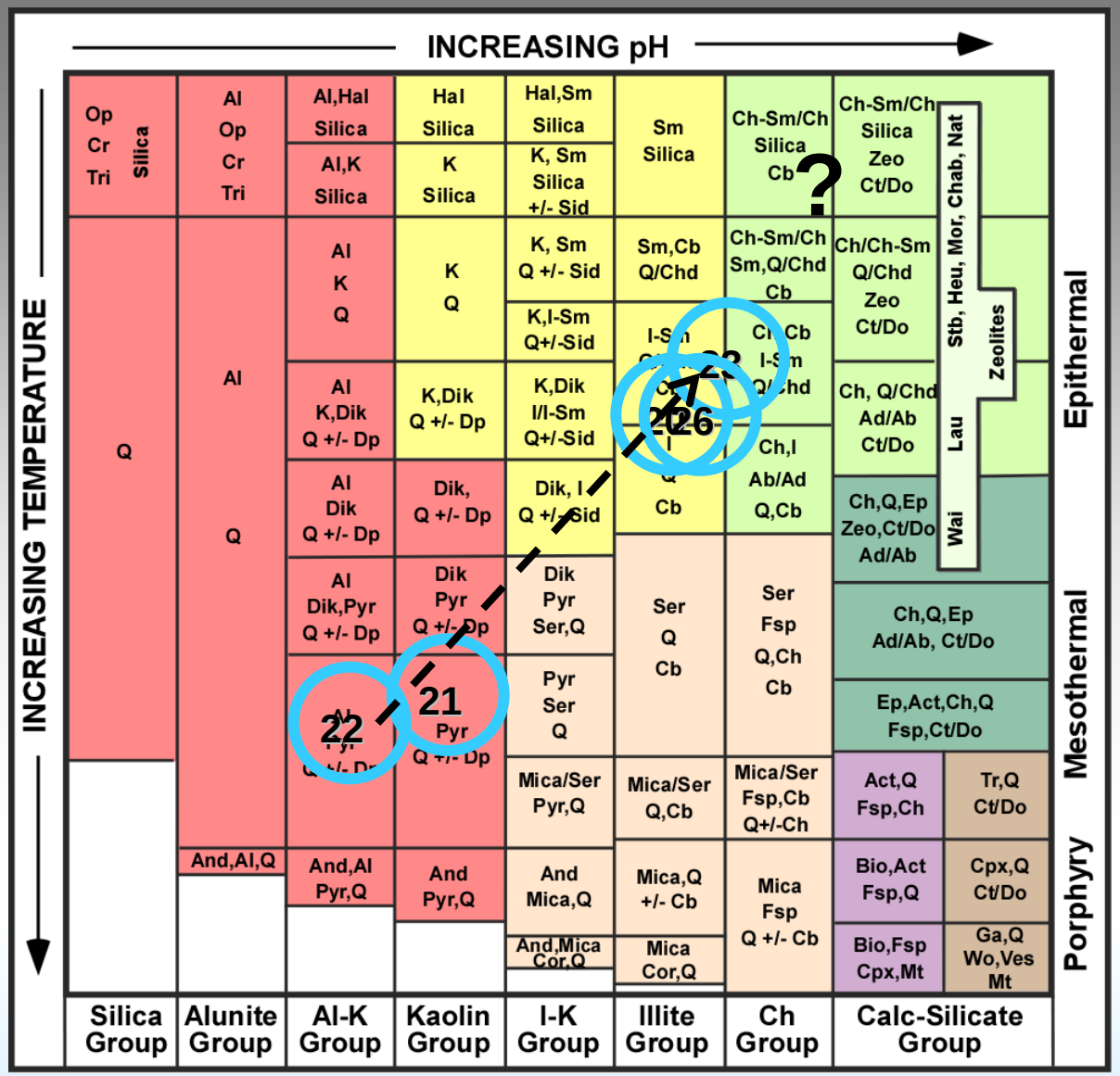
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Al,K Silica
Hal Silica
K Silica
Hal,Sm Silica
K, Sm Silica +/- Sid
Sm Silica
Ch-Sm/Ch Silica Cb
Ch-Sm/Ch Silica Zeo Ct/Do
Q
Al
Q
Al K Q
K Q
K, Sm Q +/- Sid
K,I-Sm Q+/-Sid
Sm,Cb Q/Chd
Ch-Sm/Ch Sm,Q/Chd Cb
Ch/Ch-Sm Q/Chd Zeo Ct/Do
Al K,Dik Q +/- Dp
K,Dik Q +/- Dp
K,Dik I/I-Sm Q+/-Sid
Ch, Q/Chd Ad/Ab Ct/Do
Ch,I Ab/Ad Q,Cb
Al Dik Q +/- Dp
Dik, Q +/- Dp
Dik, I Q +/- Sid
Ch,Q,Ep Zeo,Ct/Do Ad/Ab
Al Dik,Pyr Q +/- Dp
Dik Pyr Q +/- Dp
Dik Pyr Ser,Q
Ser Q Cb
Ser Fsp Q,Ch Cb
Ch,Q,Ep Ad/Ab, Ct/Do
Pyr Ser Q
Ep,Act,Ch,Q Fsp,Ct/Do
Mica/Ser Pyr,Q
Mica/Ser Q,Cb
Mica/Ser Fsp,Cb Q+/-Ch
Act,Q Fsp,Ch
Tr,Q Ct/Do
And,Al,Q
And,Al Pyr,Q
And Pyr,Q
And Mica,Q
Mica,Q +/- Cb
Mica Fsp Q +/- Cb
Bio,Act Fsp,Q
Cpx,Q Ct/Do
And,Mica Cor,Q
Mica Cor,Q
Bio,Fsp Cpx,Mt
Ga,Q Wo,Ves Mt
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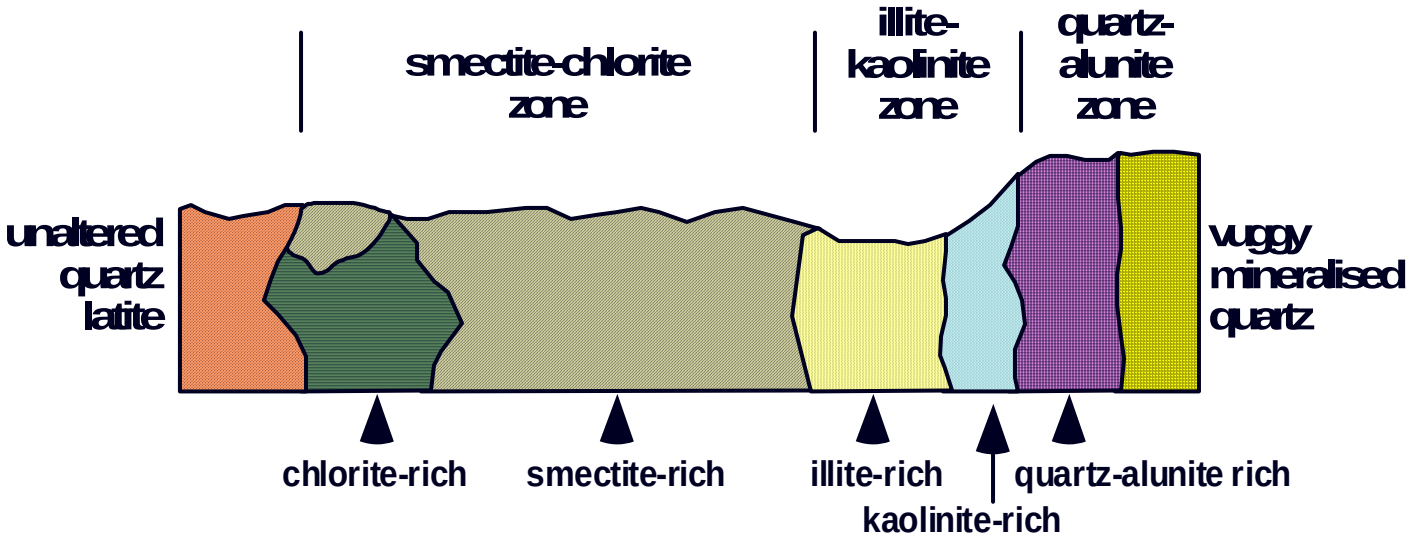


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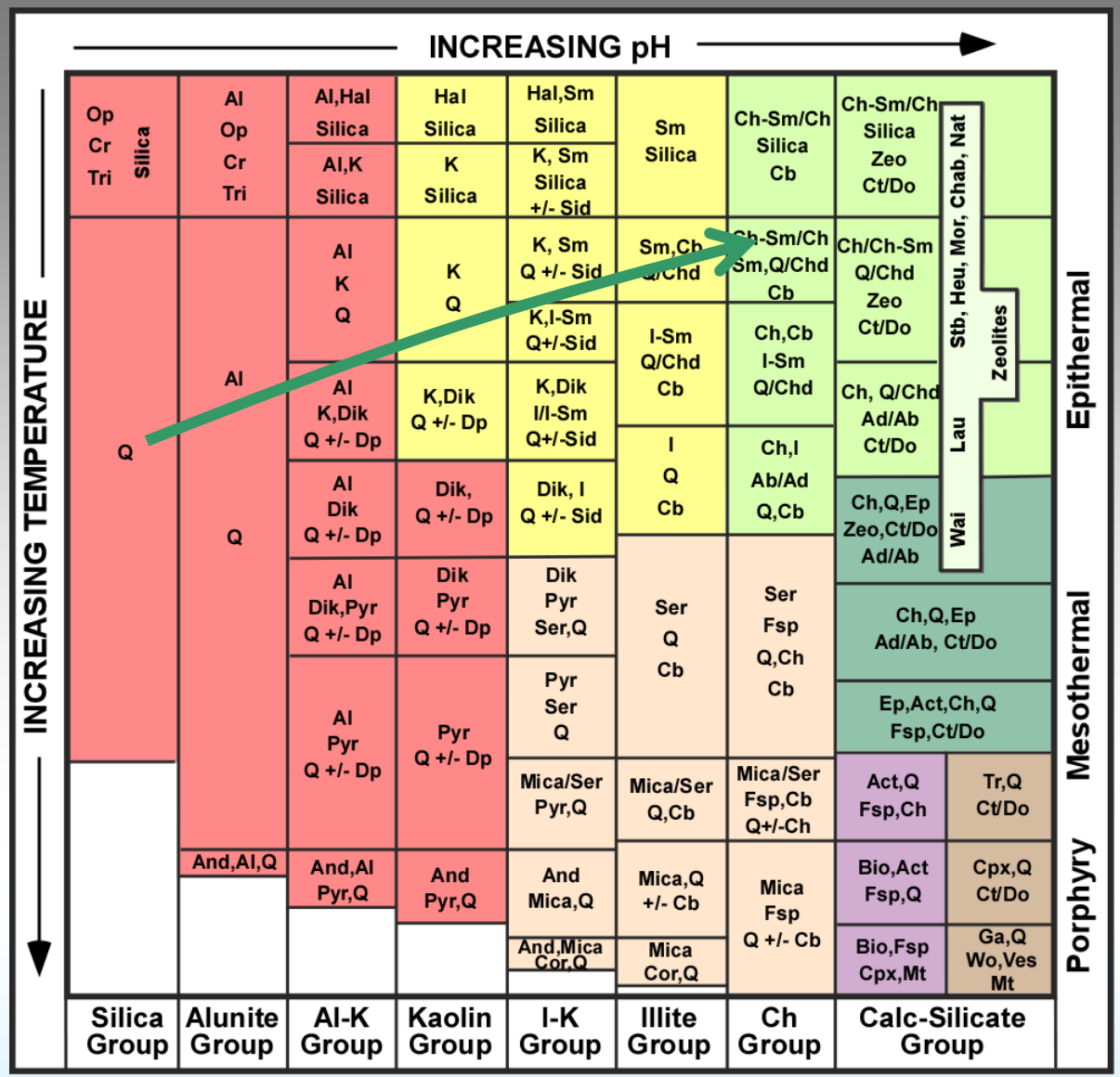
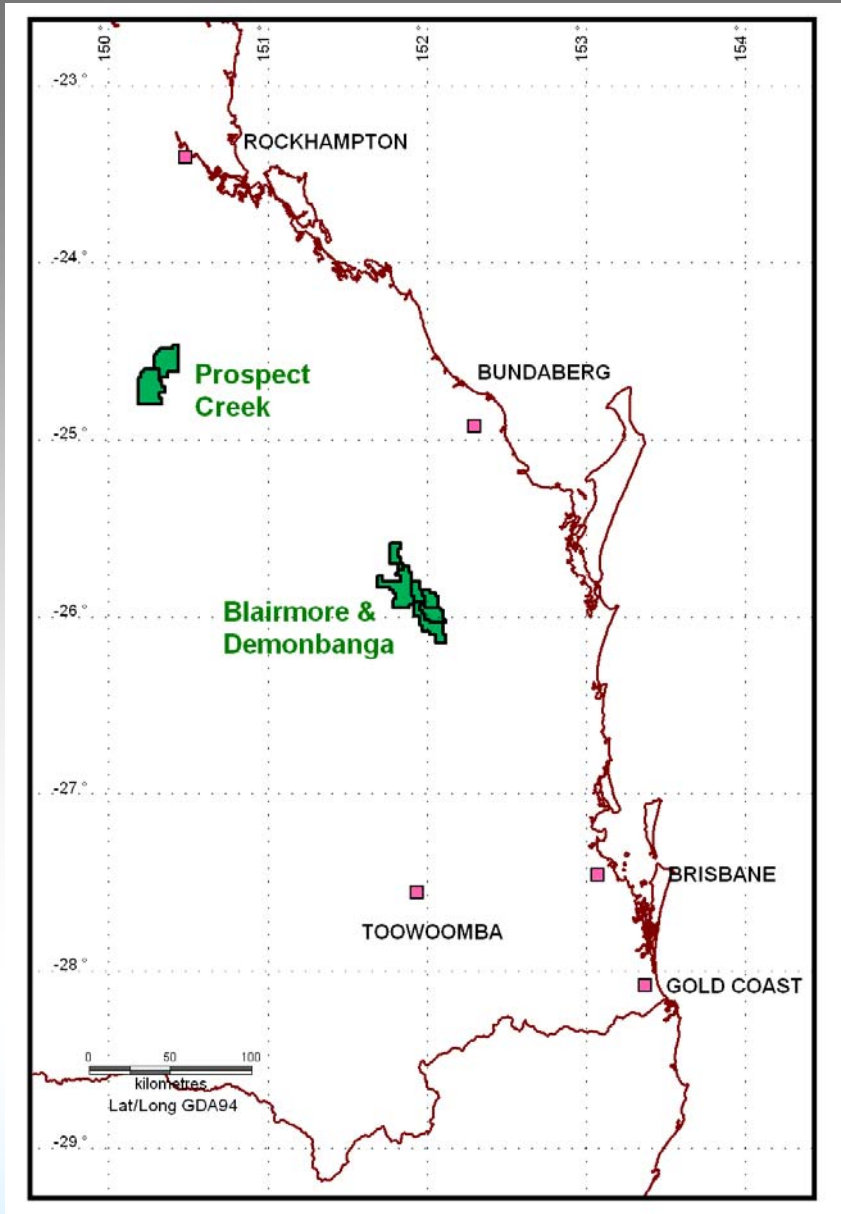
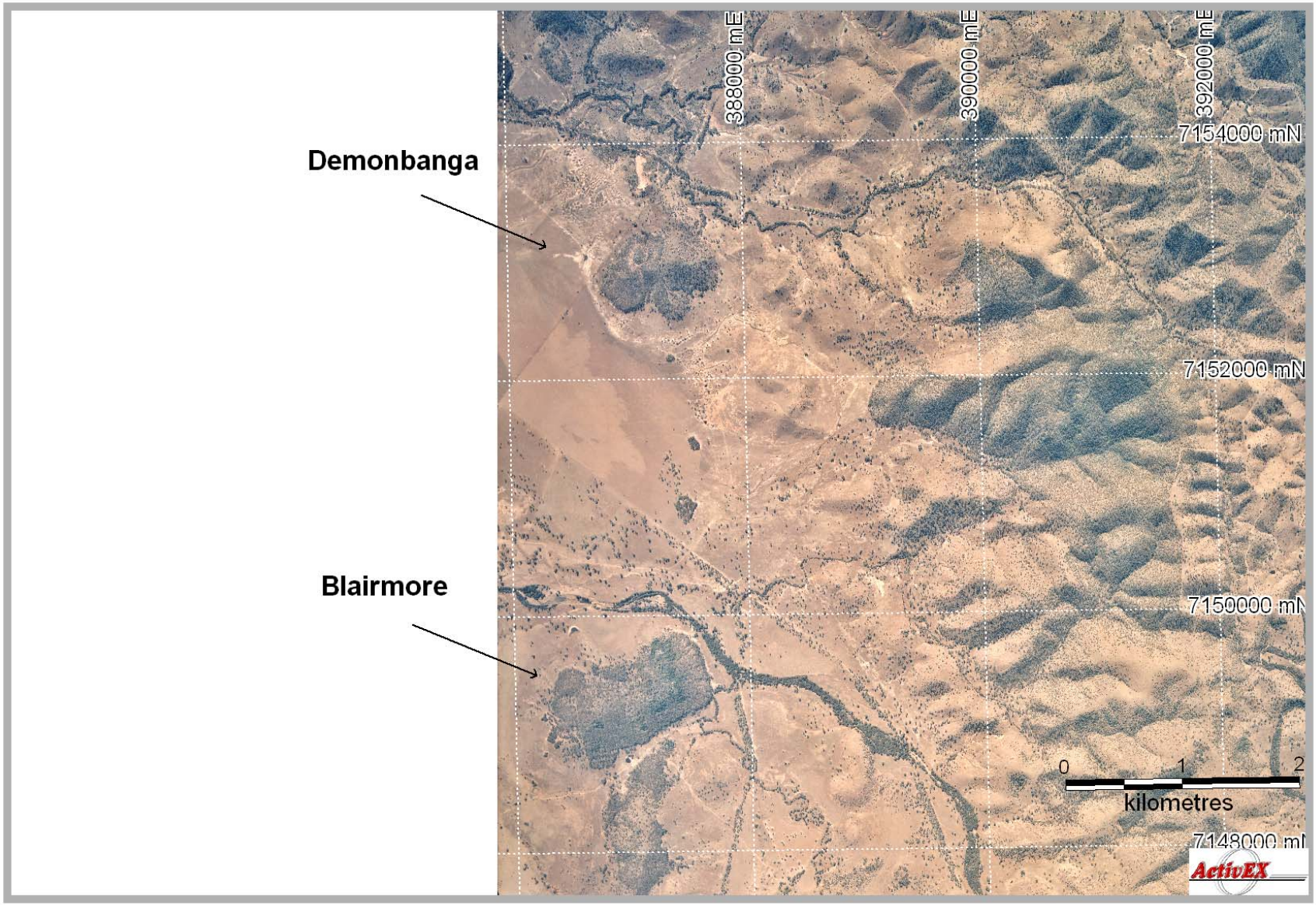
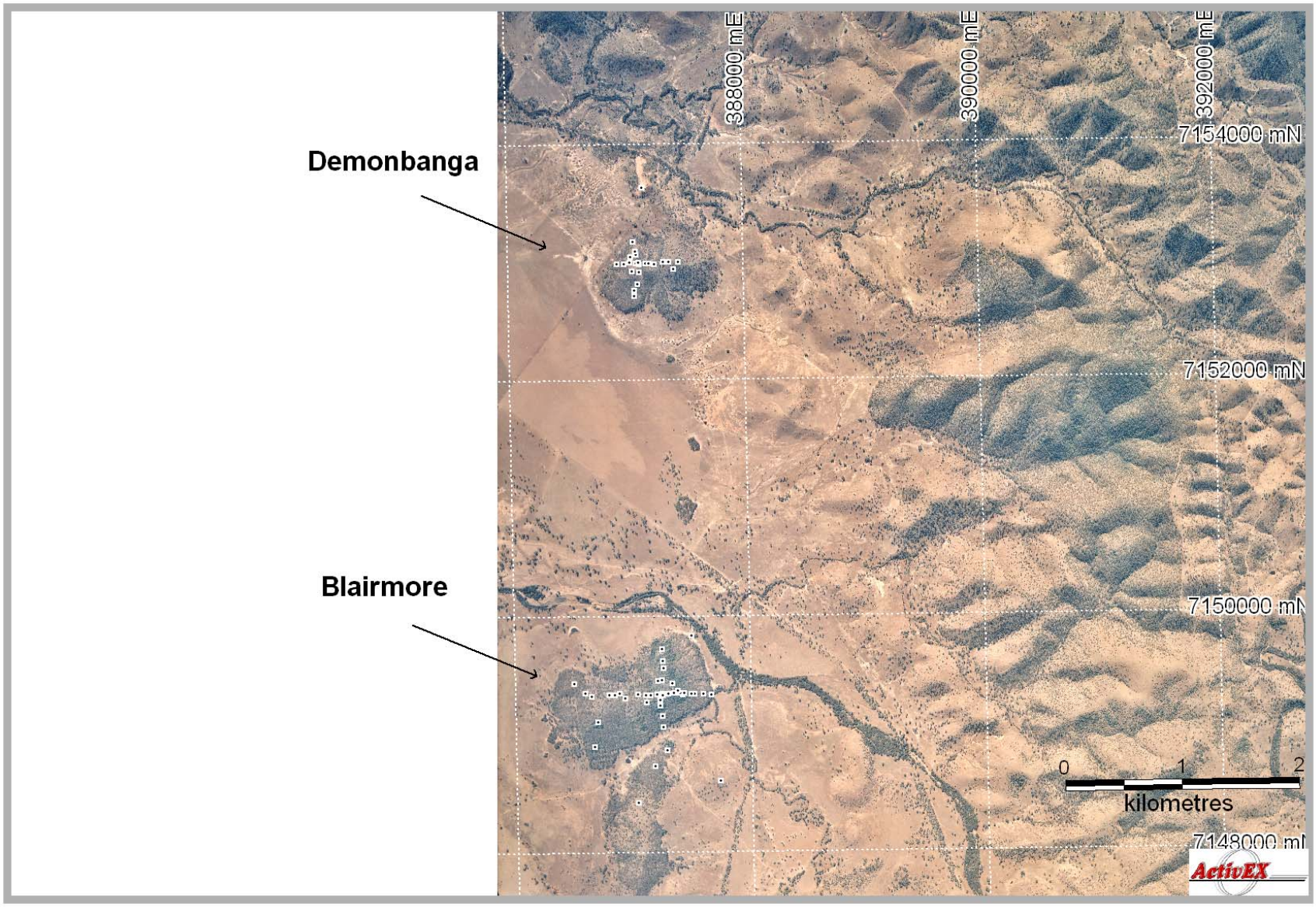

INCREASING pH
INCREASING TEMPERATURE
Op
Cr
Tri
Silica
Q
Al
Op
Cr
Tri
Al
Q
And,Al,Q
Al,Hal
Silica
Al,K
Silica
Al
K
Q
Al
K,Dik
Q +/- Dp
Al
Dik
Q +/- Dp
Al
Dik,Pyr
Q +/- Dp
Al
Pyr
Q +/- Dp
And,Al
Pyr,Q
Hal
Silica
K
Silica
K
Q
K,Dik
Q +/- Dp
Dik,
Q +/- Dp
Dik
Pyr
Q +/- Dp
Pyr
Q +/- Dp
And
Pyr,Q
Hal,Sm
Silica
K, Sm
Silica
+/- Sid
K, Sm
Q +/- Sid
K,I-Sm
Q+/-Sid
K,Dik
I/I-Sm
Q+/-Sid
Dik, I
Q +/- Sid
Dik
Pyr
Ser,Q
Pyr
Ser
Q
Mica/Ser
Pyr,Q
And
Mica,Q
And,Mica
Cor,Q
Sm
Silica
Sm,Ch
Q/Chd
I-Sm
Q/Chd
Cb
I
Q
Cb
Ser
Q
Cb
Mica/Ser
Q,Cb
Mica,Q
+/- Cb
Mica
Cor,Q
Ch-Sm/Ch
Silica
Cb
Ch-Sm/Ch
Sm,Q/Chd
Cb
Ch,Cb
I-Sm
Q/Chd
Ch,I
Ab/Ad
Q,Cb
Ser
Fsp
Q,Ch
Cb
Mica/Ser
Fsp,Cb
Q+/-Ch
Mica
Fsp
Q +/- Cb
Ch-Sm/Ch
Silica
Zeo
Ct/Do
Ch/Ch-Sm
Q/Chd
Zeo
Ct/Do
Ch, Q/Chd
Ad/Ab
Ct/Do
Ch,Q,Ep
Zeo,Ct/Do
Ad/Ab
Ch,Q,Ep
Ad/Ab, Ct/Do
Ep,Act,Ch,Q
Fsp,Ct/Do
Act,Q
Fsp,Ch
Tr,Q
Ct/Do
Bio,Act
Fsp,Q
Cpx,Q
Ct/Do
Bio,Fsp
Cpx,Mt
Ga,Q
Wo,Ves
Mt
Stb, Heu, Mor, Chab, Nat
Lau
Zeolites
Wai
Epithermal
Mesothermal
Porphyry
Silica Group
Alunite Group
Al-K Group
Kaolin Group
I-K Group
Illite Group
Ch Group
Calc-Silicate Group


150
151
152
153
154
-23°
-24°
-25°
-26°
-27°
-28°
-29°
ROCKHAMPTON
Prospect Creek
BUNDABERG
Blairmore & Demonbanga
BRISBANE
TOOWOOMBA
GOLD COAST
0
50
100
kilometres
Lat/Long GDA94


Demonbanga
Blairmore
388000 mE
390000 mE
392000 mE
7154000 mN
7152000 mN
7150000 mN
7148000 mN
0
1
2
kilometres
ActivEX


Demonbanga
Blairmore
388000 mE
390000 mE
392000 mE
7154000 mN
7152000 mN
7150000 mN
7148000 mN
0
1
2
kilometres
ActivEX

# Blairmore – Demonbanga

**Alteration Minerals from PIMA study**

Alunite

Pyrophyllite

Dickite

Kaolinite

Diaspore

Topaz

Sericite

Illite-Smectite

Smectite

The minerals occur in a variety of assemblages.


pyrophyllite-alunite


kaolinite-pyrophyllite-topaz

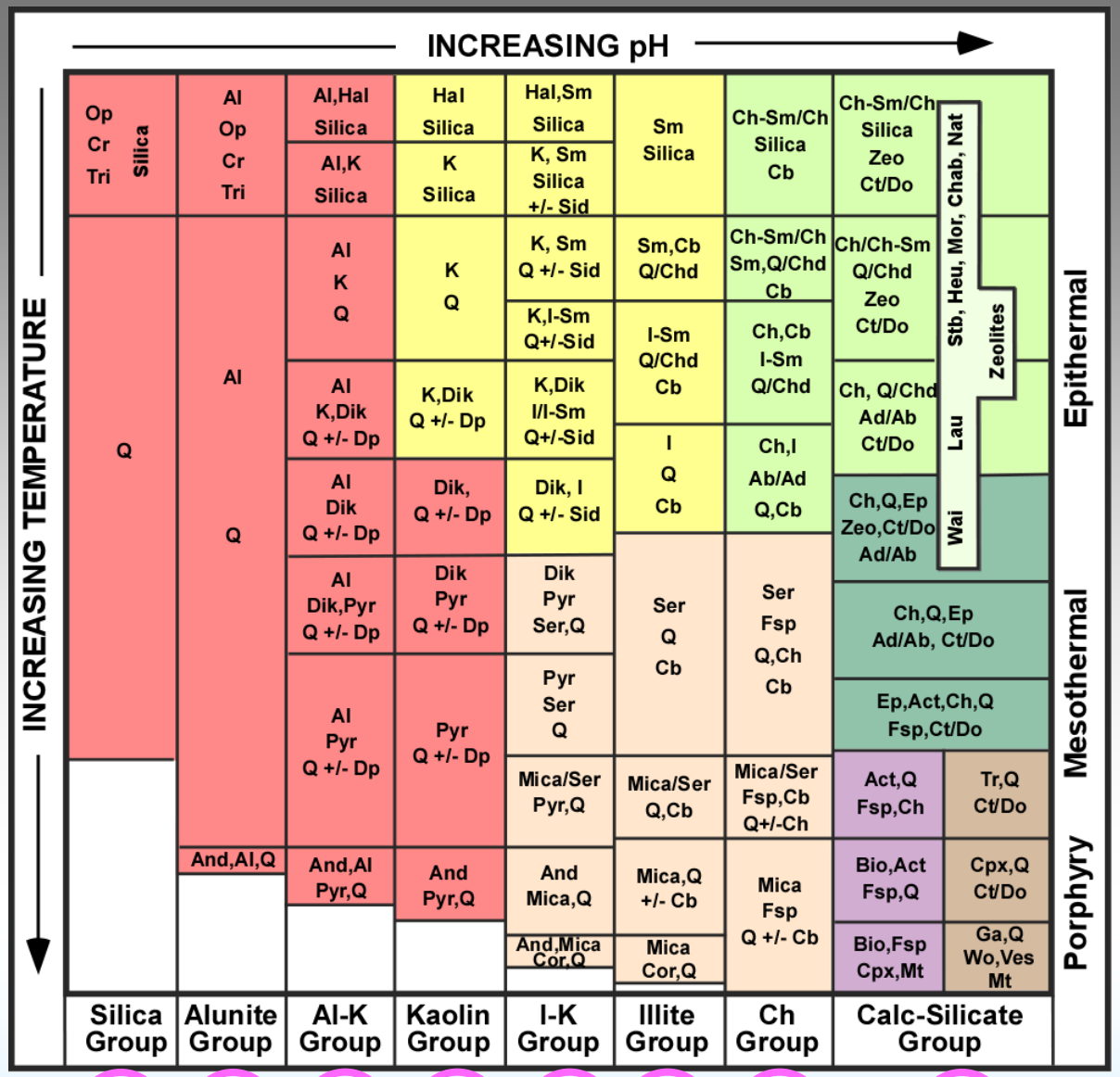

pyrophyllite-kaolinite-diaspore

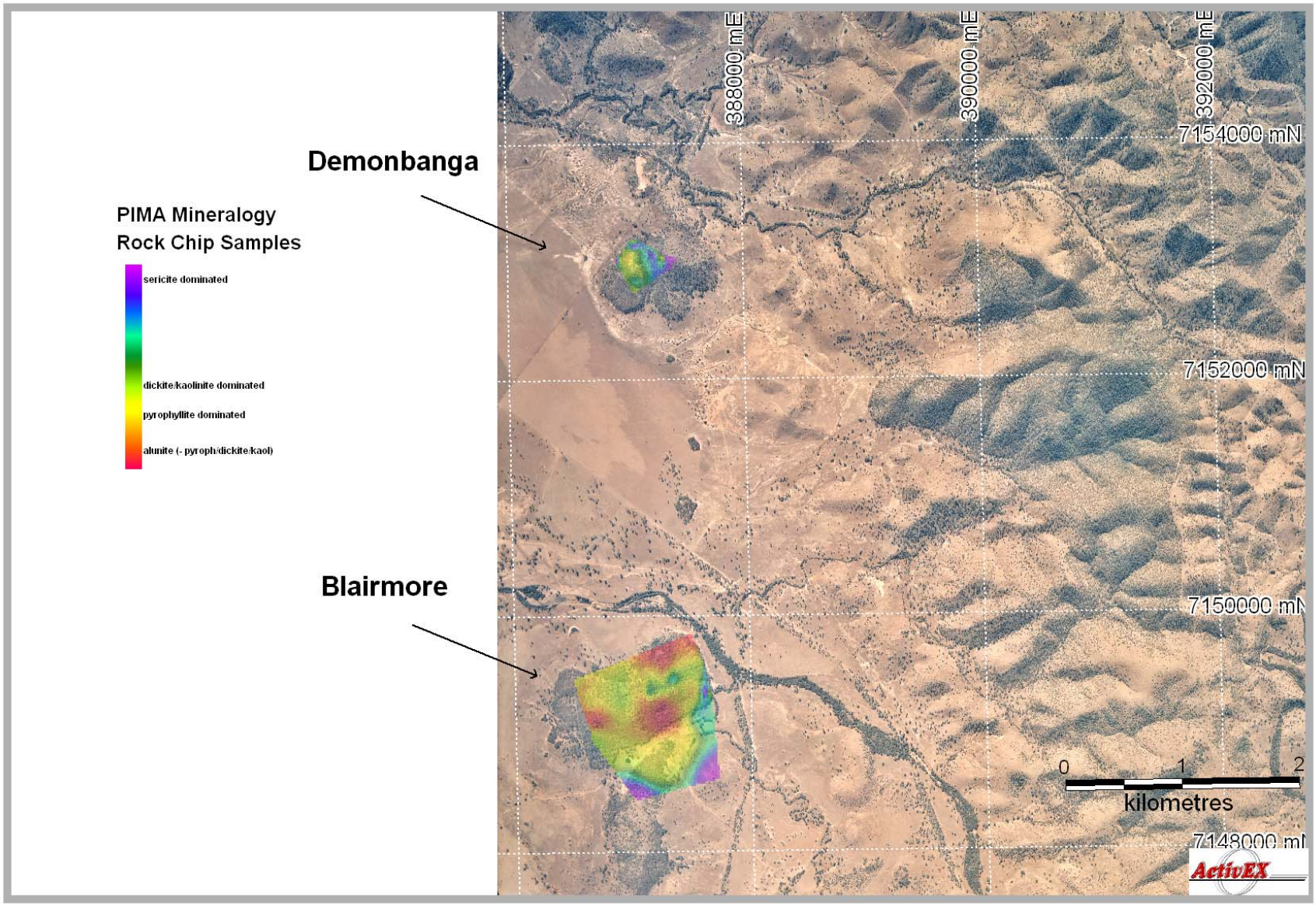

dickite-kaolinite-topaz

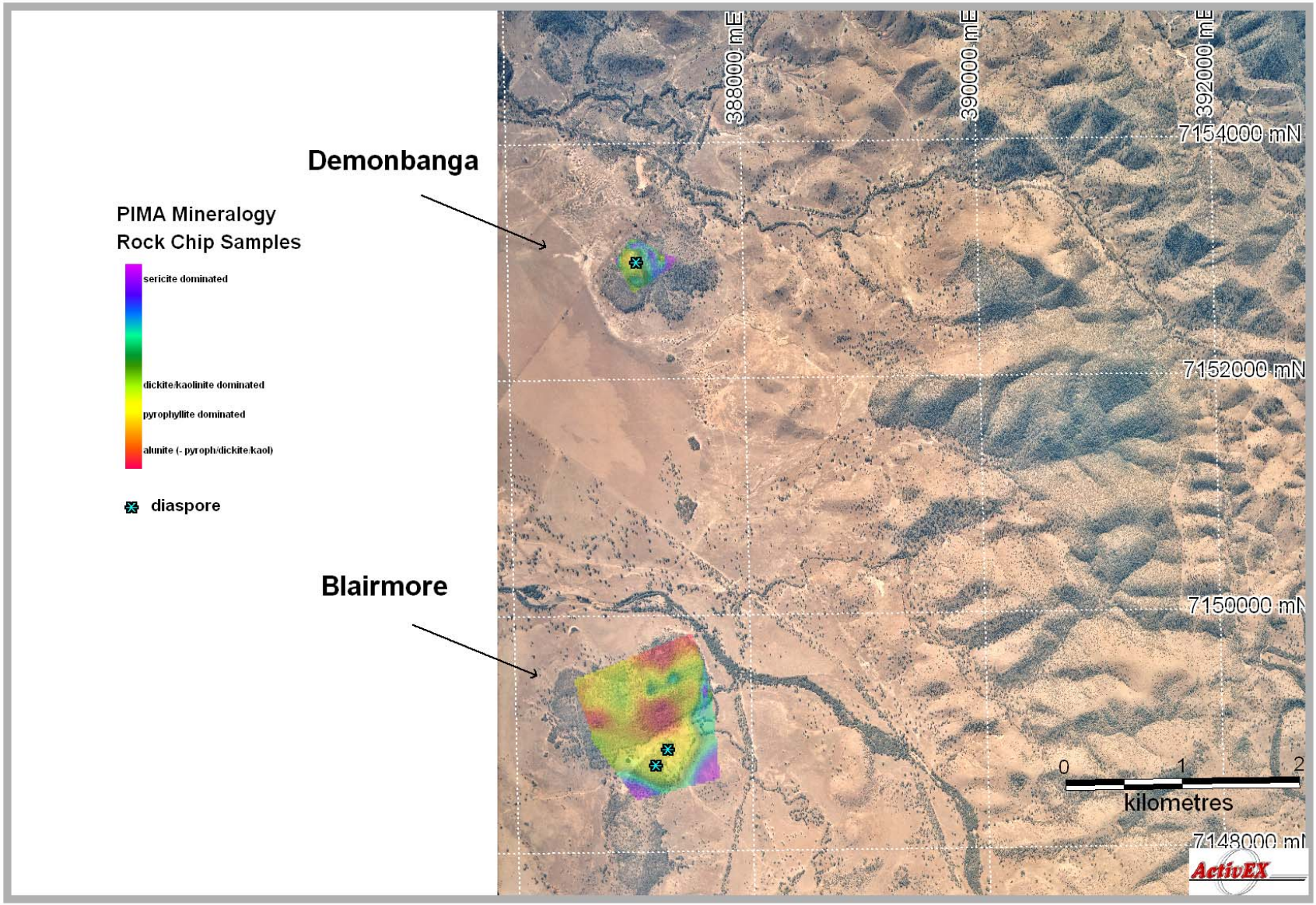

sericite-kaolinite

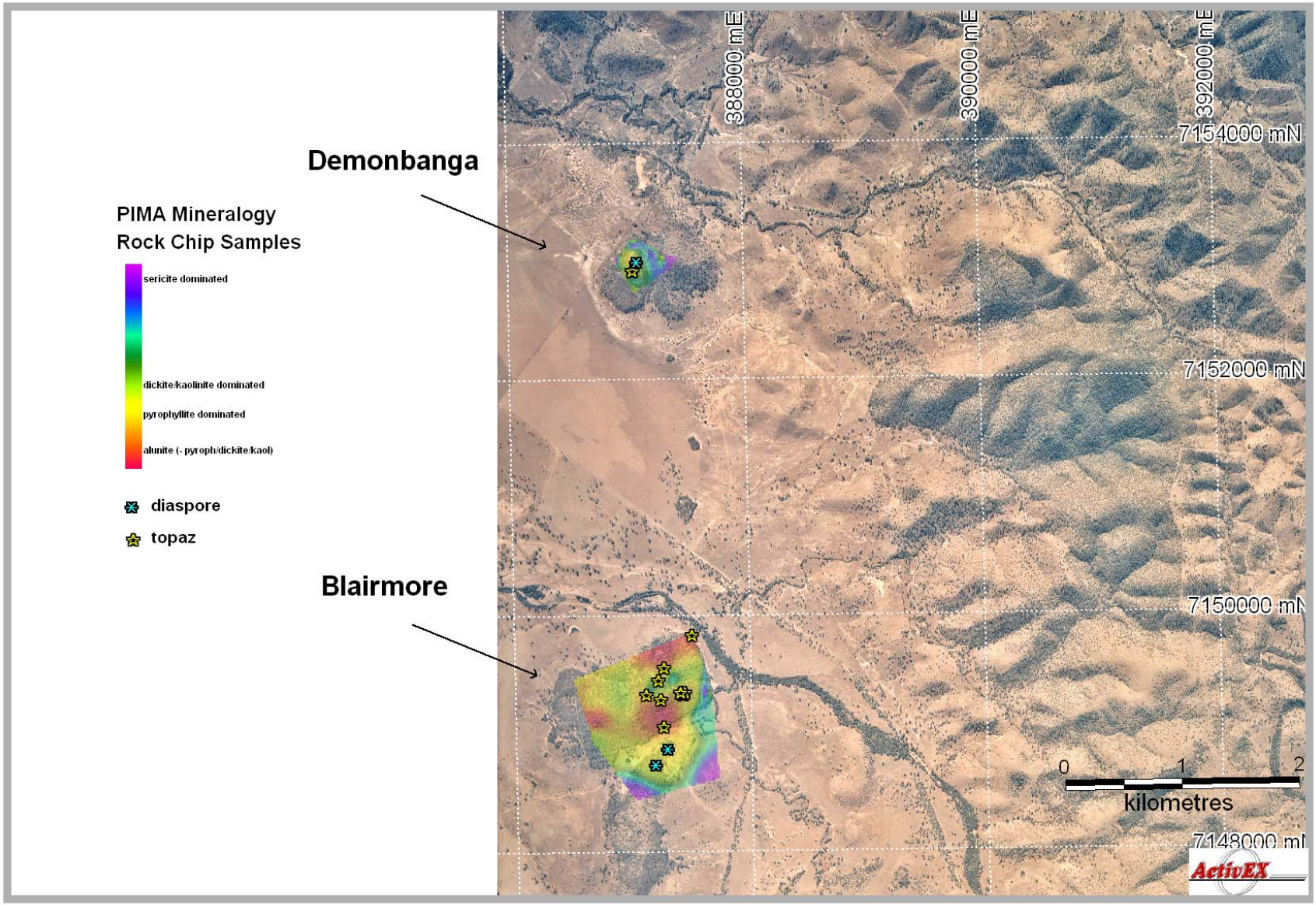

montmorillonite-kaolinite

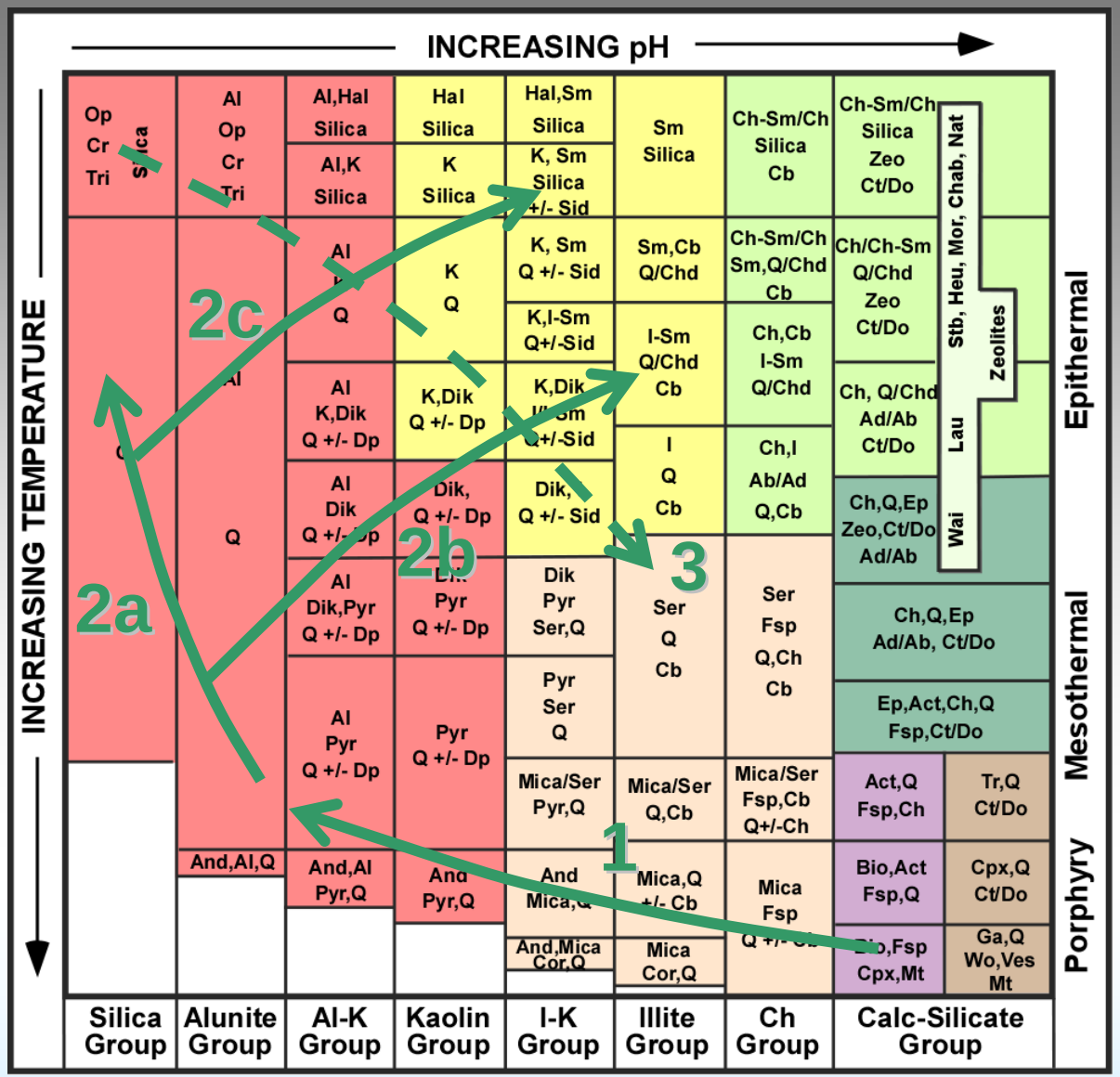

dickite
alunite


INCREASING pH
INCREASING TEMPERATURE
Epithermal
Mesothermal
Porphyry
Op Cr Tri Silica
Q
Al Op Cr Tri
Al
Q
And,Al,Q
Al,Hal Silica
Al,K Silica
Al K Q
Al K,Dik Q +/- Dp
Al Dik Q +/- Dp
Al Dik,Pyr Q +/- Dp
Al Pyr Q +/- Dp
And,Al Pyr,Q
Hal Silica
K Silica
K Q
K,Dik Q +/- Dp
Dik, Q +/- Dp
Dik Pyr Q +/- Dp
Pyr Q +/- Dp
And Pyr,Q
Hal,Sm Silica
K, Sm Silica +/- Sid
K, Sm Q +/- Sid
K,I-Sm Q+/-Sid
K,Dik I/I-Sm Q+/-Sid
Dik, I Q +/- Sid
Dik Pyr Ser,Q
Pyr Ser Q
Mica/Ser Pyr,Q
And Mica,Q
And,Mica Cor,Q
Sm Silica
Sm,Cb Q/Chd
I-Sm Q/Chd Cb
I Q Cb
Ser Q Cb
Mica/Ser Q,Cb
Mica,Q +/- Cb
Mica Cor,Q
Ch-Sm/Ch Silica Cb
Ch-Sm/Ch Sm,Q/Chd Cb
Ch,Cb I-Sm Q/Chd
Ch,I Ab/Ad Q,Cb
Ser Fsp Q,Ch Cb
Mica/Ser Fsp,Cb Q+/-Ch
Mica Fsp Q +/- Cb
Ch-Sm/Ch Silica Zeo Ct/Do
Ch/Ch-Sm Q/Chd Zeo Ct/Do
Ch, Q/Chd Ad/Ab Ct/Do
Ch,Q,Ep Zeo,Ct/Do Ad/Ab
Ch,Q,Ep Ad/Ab, Ct/Do
Ep,Act,Ch,Q Fsp,Ct/Do
Act,Q Fsp,Ch
Tr,Q Ct/Do
Bio,Act Fsp,Q
Cpx,Q Ct/Do
Bio,Fsp Cpx,Mt
Ga,Q Wo,Ves Mt
Stb, Heu, Mor, Chab, Nat
Zeolites
Lau
Wai
Silica Group
Alunite Group
Al-K Group
Kaolin Group
I-K Group
Illite Group
Ch Group
Calc-Silicate Group
1
2
3
4
5
6
7
8


Demonbanga
PIMA Mineralogy
Rock Chip Samples
sericite dominated
dickite/kaolinite dominated
pyrophyllite dominated
alunite (- pyroph/dickite/kaol)
Blairmore
388000 mE
390000 mE
392000 mE
7154000 mN
7152000 mN
7150000 mN
7148000 mN
0
1
2
kilometres
ActivEX


Demonbanga
PIMA Mineralogy
Rock Chip Samples
sericite dominated
dickite/kaolinite dominated
pyrophyllite dominated
alunite (- pyroph/dickite/kaol)
diaspore
Blairmore
388000 mE
390000 mE
392000 mE
7154000 mN
7152000 mN
7150000 mN
7148000 mN
0
1
2
kilometres
ActivEX


Demonbanga
PIMA Mineralogy
Rock Chip Samples
sericite dominated
dickite/kaolinite dominated
pyrophyllite dominated
alunite (- pyroph/dickite/kaol)
diaspore
topaz
Blairmore
388000 mE
390000 mE
392000 mE
7154000 mN
7152000 mN
7150000 mN
7148000 mN
0
1
2
kilometres
ActivEX




1. Porphyry high sulphidation systems
2. Structural & lithological high sulphidation systems

2a. Silica Core

2b. Deep peripheral zones

2c. Shallow peripheral zones

3. Descending cool acid sulphate fluids