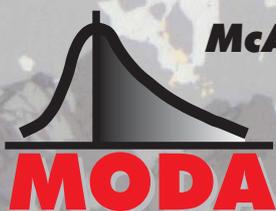


MMG EXPLORATION

ROSEBERY 3800N DRILLHOLE 411R-D1 MINERAGRAPHY

JULY 2012



McArthur Ore Deposit Assessments Pty Ltd

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MMG EXPLORATION - TASMANIA
Rosebery 3800N – DDH 411R-D1
Mineragraphic Assessment
July 2012

SUMMARY

METHOD

7 core samples (#1392743-1392749) from Rosebery 3800N drillhole 411R-D1, were submitted by David Wallace (MMG) for mineragraphic assessment.

From each of the sawn 50mm x 25mm drillcore samples, a polished thin section was prepared by Australian Petrographics (Queanbeyan, NSW), and the remaining offcuts were submitted for QXRD by Stafford McKnight (McKnight Mineralogy, Ballarat, VIC) and assay by ALS (Burnie, TAS).

In a quantitative sense, each polished section was scanned on a 1mm grid and 100 53µm circular areas (or masks) were microscopically logged [*53µm was chosen to match the metallurgical sieve size*]. For each 53µm-diameter area on the grid, the minerals present were identified and their area% was visually estimated. The minerals logged were pyrite (Py), sphalerite (Sp), galena (Gn), chalcopyrite (Cp), tetrahedrite (Te), quartz (Qz), barite+albite (Ba), sericite (Se) and carbonate (Co). The results were tallied and summary compositions and liberation parameters calculated, to compare with MODA's extensive Rosebery Mill Feed mineralogy database.

In a qualitative sense, each polished thin section was microscopically examined to assess the mineralogy and textural variability. From each sample, approximately 12 digital photomicrographs were taken to illustrate the textural features, at various levels of magnification. The images were collated and annotated using PowerPoint.

This study was specifically undertaken to evaluate the features of the sulphide mineralisation and to compare it with the main Rosebery mineralisation to the south.

GENERAL DESCRIPTION

The 7 samples submitted consisted of:

| Sample | Brief Description |
|---------|--|
| 1392743 | Wallrock, strongly quartz-sericite altered, minor fabric-parallel pyrite bands |
| 1392744 | Banded albite-quartz-sericite-barite rock, minor pyrite-sphalerite-galena layers |
| 1392745 | Strongly banded barite-sulphide-quartz-sericite rock, common sphalerite-pyrite-galena-tetrahedrite layers |
| 1392746 | Strongly banded barite-sulphide-sericite-quartz rock, common sphalerite-pyrite-galena-tetrahedrite layers |
| 1392747 | Strongly banded massive sulphide, dominant sphalerite-galena with pyrite, chalcocopyrite and tetrahedrite, minor barite and sericite |
| 1392748 | Banded barite-quartz-sericite, minor sphalerite-pyrite-galena layers |
| 1392749 | Wallrock, strongly sericite-quartz altered, quartz-carbonate-barite veinlets, rare pyrite |

COMPOSITION

The offcut assays undertaken by ALS are tabulated below:

| Method | ME-XRF15d | ME-XRF15d | ME-XRF15d | ME-XRF15d | ME-XRF15d | ME-XRF15d | Ag-AA52 |
|---------------|-----------|-----------|-----------|-----------|-----------|-----------|---------|
| Sample Number | Cu | Pb | Zn | Ba | As | Fe | Ag |
| | % | % | % | % | % | % | ppm |
| 1392743 | <0.01 | <0.01 | <0.01 | 0.47 | <0.05 | 2.12 | <1 |
| 1392744 | 0.15 | 3.07 | 6.23 | 13.95 | <0.05 | 5.14 | 110 |
| 1392745 | 0.32 | 7.16 | 12.05 | 33.20 | <0.05 | 3.20 | 790 |
| 1392746 | 0.24 | 5.95 | 8.59 | 39.60 | <0.05 | 3.37 | 341 |
| 1392747 | 1.29 | 20.00 | 38.60 | 4.52 | 0.07 | 3.07 | 530 |
| 1392748 | 0.07 | 3.57 | 6.88 | 41.40 | <0.05 | 4.49 | 590 |
| 1392749 | 0.02 | <0.01 | 0.02 | 1.00 | <0.05 | 0.76 | 3 |

The offcut QXRD analysis undertaken by McKnight Mineralogy gave the following results:

| Sample | Sp | Gn | Py | Cp | Ma | Ba | Qz | Mu | Ab | Ak/Do | Ca |
|---------|------|------|-----|-----|-----|------|------|------|------|-------|-----|
| 1392743 | 0.2 | 0.4 | 0.9 | 0.0 | 0.0 | 0.0 | 63.8 | 28.3 | 0.9 | 5.5 | 0.0 |
| 1392744 | 10.3 | 3.5 | 8.9 | 0.5 | 0.8 | 24.1 | 13.7 | 7.8 | 25.2 | 5.3 | 0.0 |
| 1392745 | 17.7 | 7.8 | 3.9 | 0.7 | 0.4 | 53.1 | 5.3 | 5.2 | 5.0 | 1.0 | 0.0 |
| 1392746 | 15.3 | 6.5 | 7.5 | 0.4 | 2.4 | 59.9 | 2.3 | 1.9 | 2.2 | 0.0 | 1.6 |
| 1392747 | 48.7 | 32.9 | 0.0 | 5.0 | 0.0 | 8.3 | 0.3 | 0.0 | 4.8 | 0.0 | 0.0 |
| 1392748 | 10.8 | 3.7 | 7.5 | 0.0 | 1.8 | 68.3 | 0.6 | 1.8 | 4.1 | 0.3 | 1.1 |
| 1392749 | 0.1 | 0.0 | 0.3 | 0.0 | 0.0 | 1.0 | 36.1 | 51.7 | 0.0 | 10.7 | 0.1 |

Sp=sphalerite, Gn=galena, Py=pyrite, Cp=chalcocopyrite, Ma=marcasite, Ba=barite, Qz=quartz, Mu=muscovite, Ab=albite, Ak/Do=ankerite/dolomite, Ca=calcite

The *marcasite* reported by the QXRD could not be found optically. Conversely, the QXRD failed to detect the *tetrahedrite*.

The quantitative optical scanning gave the following mineralogical composition (volume% and weight%). The average of the five mineralised samples is also shown. Note that under high power, *albite* was extremely difficult to differentiate from *barite* and *quartz*.

Volume%

| Sample | Py | Sp | Gn | Cp | Te | Qz | Ba+Ab | Se | Co |
|--------------------|------------|-------------|------------|------------|------------|-----------|-----------|-----------|-----------|
| 1392743 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 72 | 2 | 16 | 9 |
| 1392744 | 7.6 | 2.0 | 0.3 | 0.0 | 0.0 | 60 | | 30 | 1 |
| 1392745 | 8.2 | 14.1 | 2.4 | 0.0 | 2.0 | 20 | 46 | 8 | 0 |
| 1392746 | 5.2 | 12.5 | 2.1 | 0.0 | 2.1 | 3 | 69 | 6 | 0 |
| 1392747 | 5.0 | 66.1 | 13.9 | 3.4 | 1.0 | 0 | 8 | 3 | 0 |
| 1392748 | 4.7 | 12.3 | 2.4 | 0.0 | 0.4 | 7 | 72 | 2 | 0 |
| 1392749 | 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 42 | 0 | 52 | 6 |
| Ore Average | 6.1 | 21.4 | 4.2 | 0.7 | 1.1 | 15 | 42 | 10 | Tr |

Py=pyrite, Sp=sphalerite, Gn=galena, Cp=chalcopyrite, Te=tetrahedrite, Qz=quartz, Ba+Ab=barite+albite, Se=sericite, Co=carbonate

Weight%

| Sample | Py | Sp | Gn | Cp | Te | Qz | Ba+Ab | Se | Co |
|--------------------|------------|-------------|------------|------------|------------|-----------|-----------|----------|-----------|
| 1392743 | 1.6 | 0.0 | 0.0 | 0.0 | 0.0 | 70 | 3 | 17 | 10 |
| 1392744 | 12.0 | 2.6 | 0.7 | 0.0 | 0.1 | 57 | | 26 | 1 |
| 1392745 | 10.2 | 14.3 | 4.5 | 0.0 | 2.2 | 13 | 50 | 6 | 0 |
| 1392746 | 6.0 | 11.7 | 3.7 | 0.0 | 2.1 | 2 | 71 | 4 | 0 |
| 1392747 | 5.4 | 58.5 | 22.9 | 3.1 | 1.0 | 0 | 7 | 2 | 0 |
| 1392748 | 5.4 | 11.5 | 4.2 | 0.0 | 0.4 | 4 | 73 | 1 | 0 |
| 1392749 | 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 40 | 0 | 53 | 6 |
| Ore Average | 7.8 | 19.7 | 7.2 | 0.6 | 1.1 | 11 | 44 | 8 | Tr |

Compared to recent Rosebery Mill Feed, this ore, compositionally, is:

- Much higher in barite
- Lower Sp:Py ratio, i.e. decreased *pyrite*, typical of high-*barite* ores
- Slightly lower Sp:Gn ratio, i.e. increased *galena*
- Lower *chalcopyrite*, typical of high-*barite* ores
- Much higher in *tetrahedrite*, hence the much higher Ag grade
- The author is personally unaware of the presence or absence of *albite* in normal Rosebery Feed

LIBERATION

From the quantitative logging, the liberation of the sulphides in the 5 ore samples at the 53µm “virtual” grind is summarised below:

3800N Composite Distribution% at 53µm

| Mineral | Free | Binary | Ternary | Quaternary+ |
|--------------|------|--------|---------|-------------|
| Pyrite | 26 | 46 | 24 | 3 |
| Sphalerite | 18 | 38 | 36 | 7 |
| Galena | 0 | 44 | 50 | 0 |
| Chalcopyrite | 0 | 24 | 47 | 29 |
| Tetrahedrite | 0 | 17 | 47 | 37 |

This can be compared to the long term average Rosebery Mill Feed (-106+45µm fraction):

Rosebery Mill Feed Composite Distribution% -106+45µm

| Mineral | Free | Binary | Ternary | Quaternary+ |
|--------------|------|--------|---------|-------------|
| Pyrite | 70 | 23 | 6 | 1 |
| Sphalerite | 74 | 21 | 4 | Tr |
| Galena | 26 | 59 | 14 | 2 |
| Chalcopyrite | 59 | 29 | 9 | 4 |
| Tetrahedrite | 36 | 21 | 34 | 6 |

All the sulphides in the 3800N intersection are much finer-grained.

MINERAL ASSOCIATION

From the quantitative logging, the mineral association parameters of the sulphides in the 5 ore samples at the 53µm are summarised below:

| Parameter | 3800N Ore | Long-Term Rosebery Mill Feed |
|----------------------------|-----------|------------------------------|
| % of Sp associated with Py | 6 | 5 |
| % of Sp associated with Gn | 56 | 17 |
| % of Sp associated with Te | 6 | Tr |
| % of Sp associated with Ga | 33 | 5 |
| % of Gn associated with Py | 6 | 12 |
| % of Gn associated with Sp | 83 | 66 |
| % of Gn associated with Te | 5 | 2 |
| % of Gn associated with Ga | 36 | 9 |
| % of Te associated with Py | 10 | 16 |
| % of Te associated with Sp | 51 | 25 |
| % of Te associated with Gn | 56 | 36 |
| % of Te associated with Ga | 74 | 4 |

Py=pyrite, Sp=sphalerite, Gn=galena, Te=tetrahedrite, Ga=non-sulphide gangue

Mineral associations in the 3800N ore show similar trends to the long-term Rosebery Mill Feed (but all are more elevated due to the finer grain size and therefore more minerals are likely to occur in a 53µm “grain”). However, the associations with gangue are all dramatically increased due to the abundance of *barite*, and associations with *pyrite* are reduced (in a relative sense).

METALLURGICAL IMPLICATIONS

Compared to the normal Rosebery Feed, the 3800N ore is:

- Easier to grind, due to the abundance of *barite*, and reduced *quartz*
- Likely to produce copious slimes from the abundant soft *barite*
- Finer sulphide grain size will necessitate finer grinding to maintain liberation
- All concentrates will contain more *barite* and less *pyrite*
- The Cu/Ag concentrate will be lower tonnage, but with a very high Ag grade

GRAIN ICONS

The textural style of the sphalerite and galena logged in the 53µm “grains” is shown on the following pages:

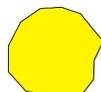
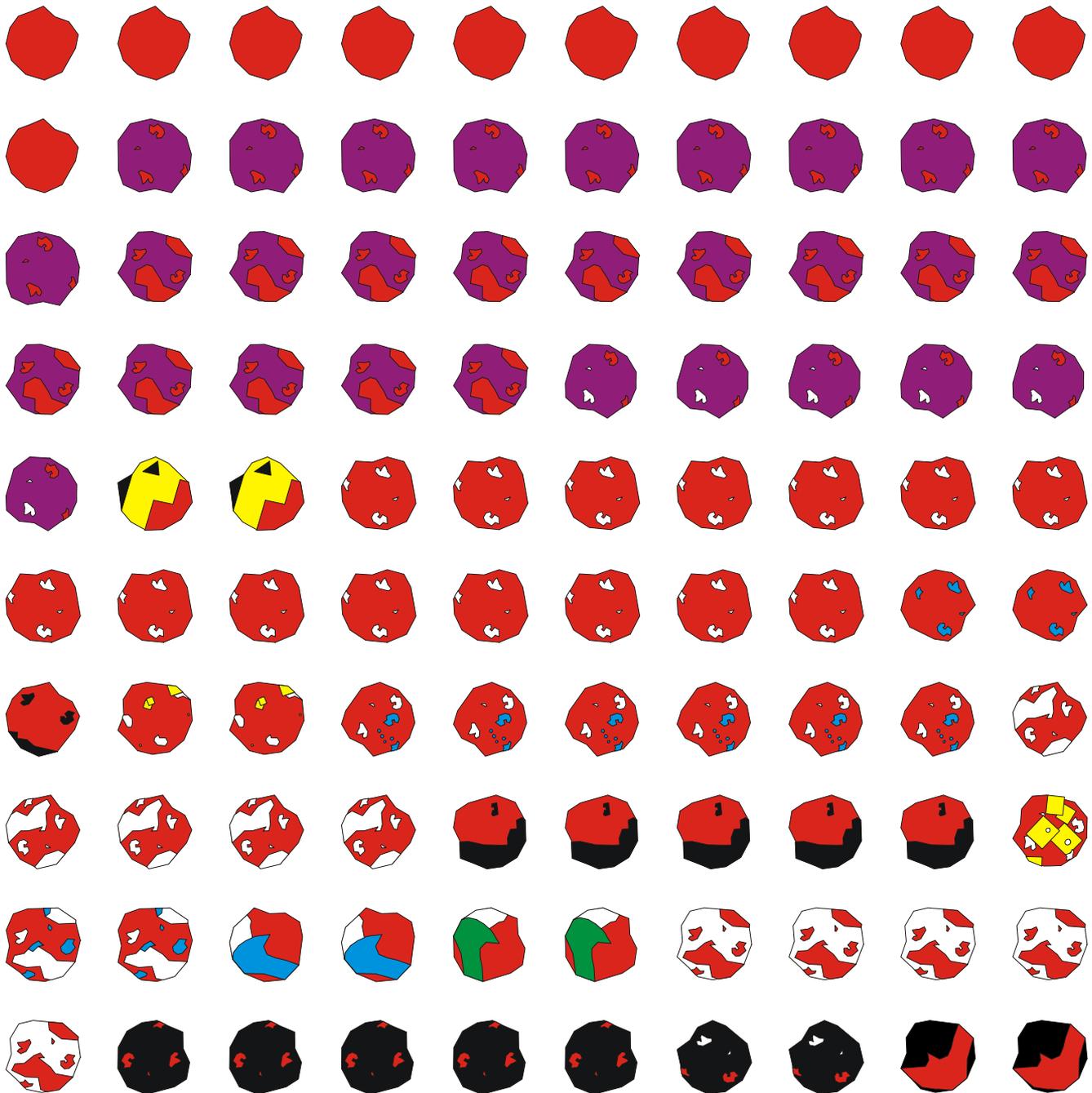
MMG Exploration - Drillcore Mineragraphy

411R-D1 Sphalerite
Textures

53µm mask

July

2012



Pyrite



Sphalerite



Galena



Chalcopyrite



Tetrahedrite



Barite



Gangue

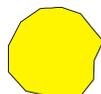
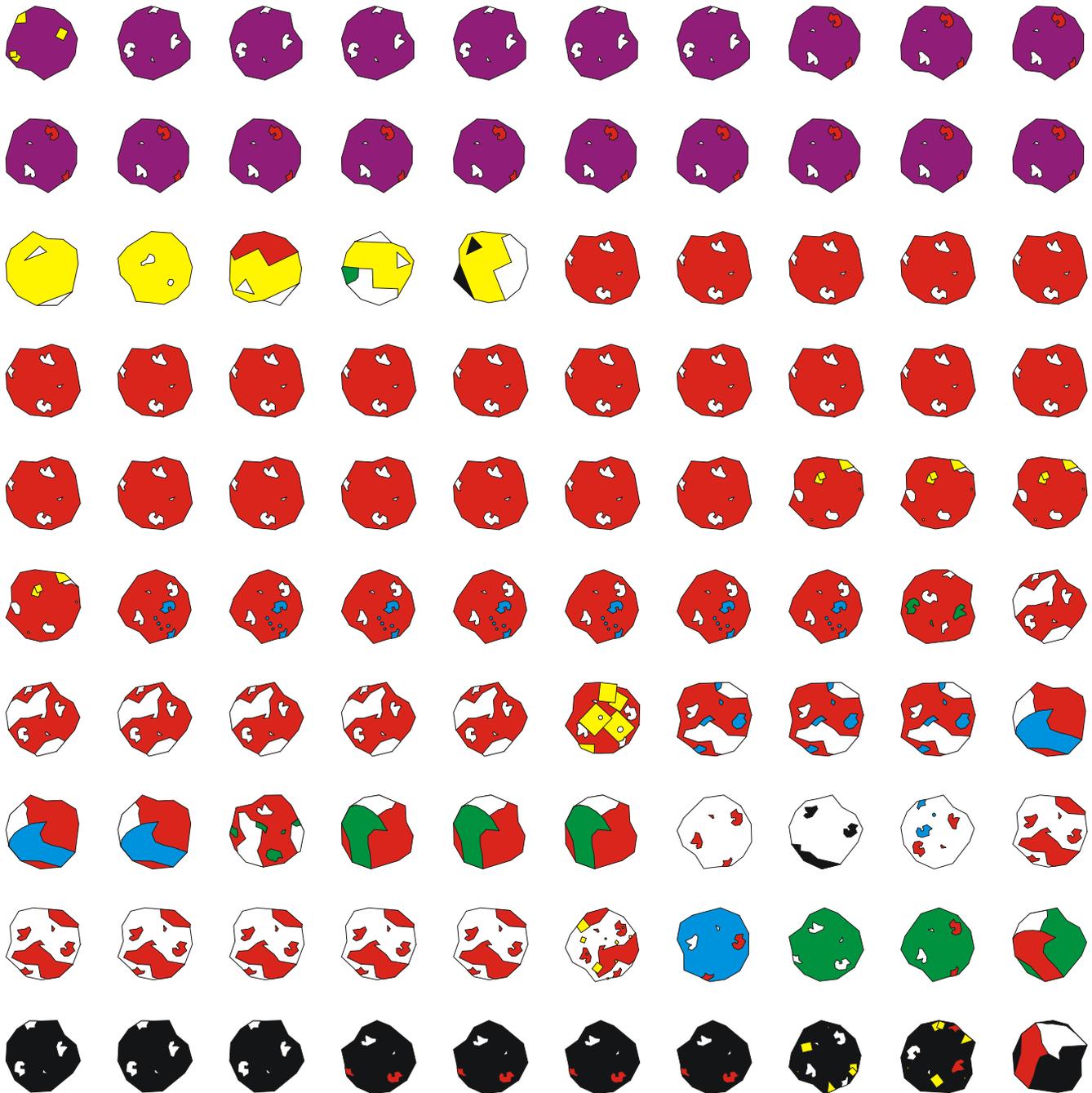
MMG Exploration - Drillcore Mineragraphy

411R-D1 Galena
Textures

53µm mask

July

2012



Pyrite



Sphalerite



Galena



Chalcopyrite



Tetrahedrite



Barite



Gangue

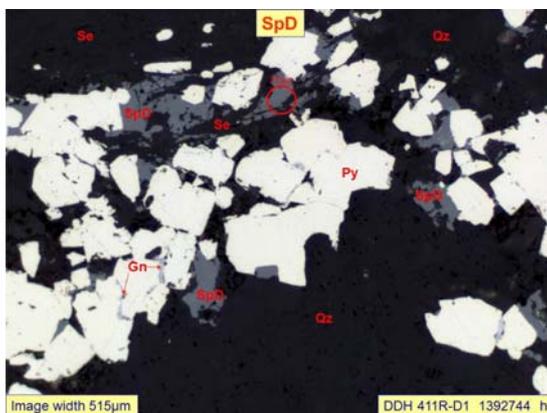
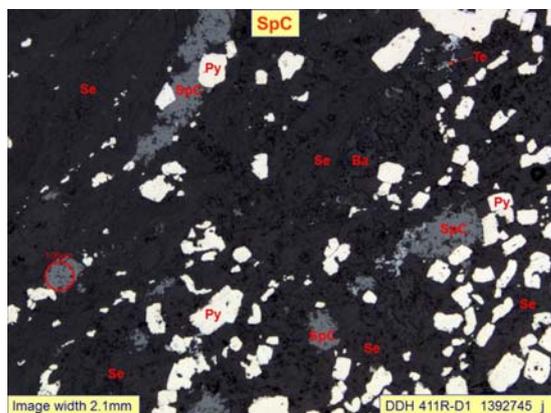
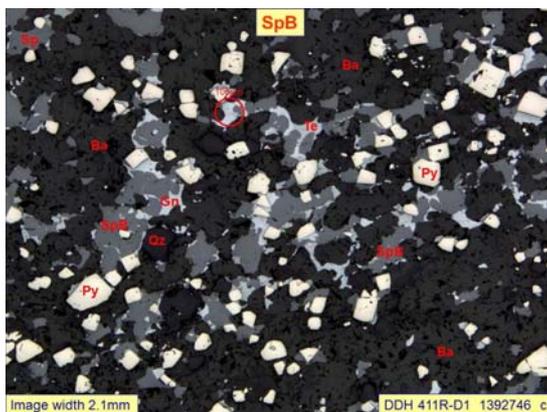
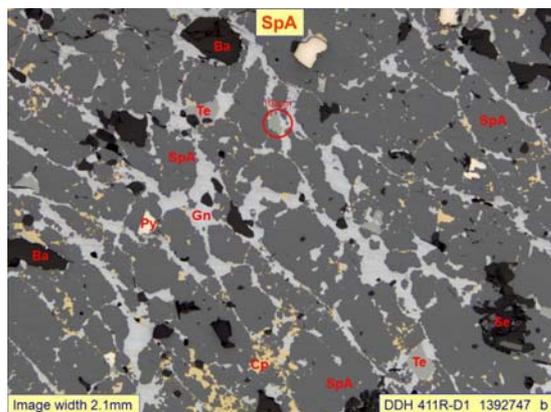
ORE MINERAL TEXTURAL SUMMARY (samples 1392744-1392748)

Sphalerite (Zn,Fe)S

The following textural types (accounting for most of the *sphalerite*) are recognised:

| Texture | Description | ~% of sphalerite |
|---------|---|------------------|
| A | Massive annealed with stretched Gn/Te/Cp, <200um inclusion-free | 55-60 |
| B | Hosted by or interstitial to Ba/Qz <400um with Gn/Py/Te | 30-35 |
| C | Stretched out grains <600um in foliated Se | 5 |
| D | Interstitial to Py <100um with Gn | 1-5 |

Py=pyrite, Sp=sphalerite, Gn=galena, Cp=chalcopyrite, Te=tetrahedrite, Qz=quartz, Ba=barite, Se=sericite, Co=carbonate

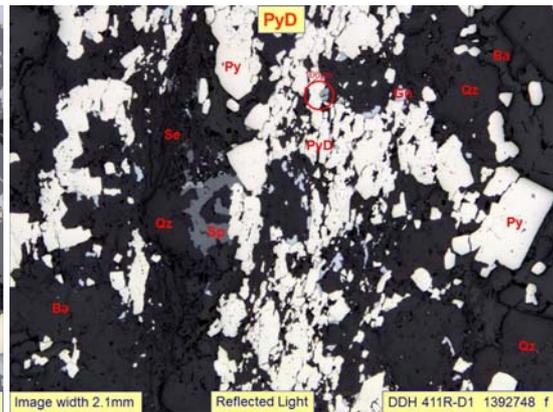
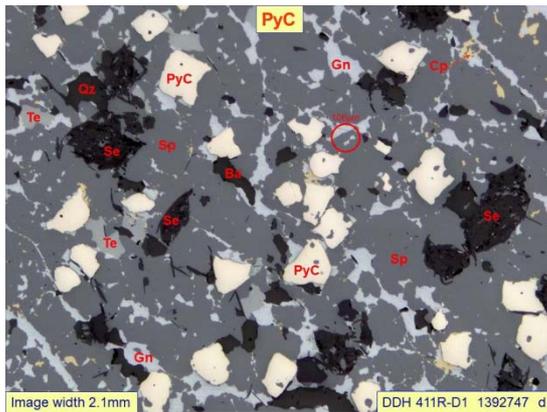
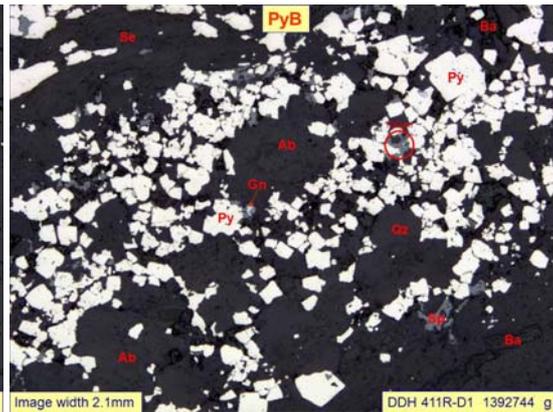
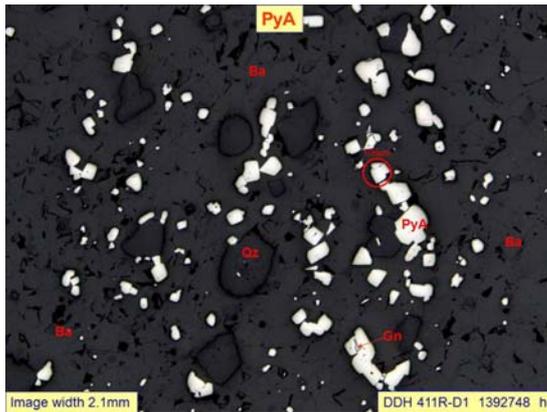


Pyrite FeS₂

The following textural types (accounting for most of the *pyrite*) are recognised:

| Texture | Description | ~% of pyrite |
|---------|--|--------------|
| A | Scattered subhedra 50-250um hosted by Ba | 40 |
| B | Aggregates <2mm hosted by Qz/Ab (minor Ba) | 30 |
| C | Scattered subhedra <150um in annealed Sp | 20-25 |
| D | Foliated fragments? <50um in Se | 5 |

Py=pyrite, Sp=sphalerite, Gn=galena, Cp=chalcopyrite, Te=tetrahedrite, Qz=quartz, Ab=albite, Ba=barite, Se=sericite, Co=carbonate

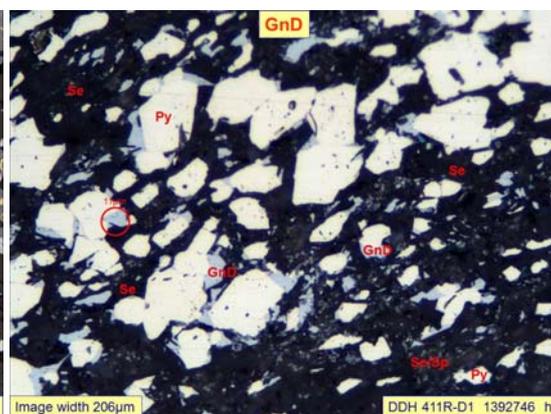
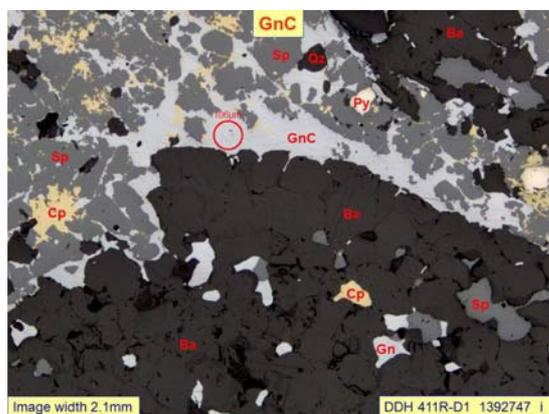
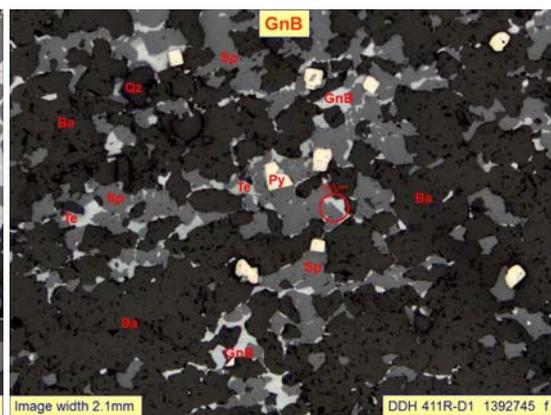
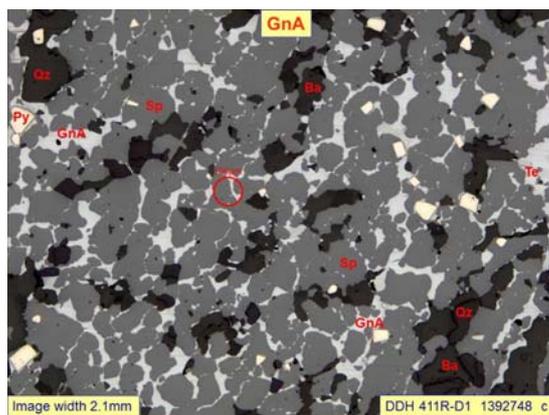


Galena PbS

The following textural types (accounting for most of the *galena*) are recognised:

| Texture | Description | ~% of galena |
|---------|---|--------------|
| A | Highly irregular grains <500um in annealed Sp, often with Te/Cp | 50 |
| B | Interstitial to Ba/Qz <400um with Sp/Py/Te | 25 |
| C | Remobilised into Ba shadow zones <600um | 15 |
| D | Ultrafine-grained flakes in Se, with fractured Py | <5 |
| E | Occupying cracks and grain boundaries in subhedral Py aggregates, <20um | <5 |

Py=pyrite, Sp=sphalerite, Gn=galena, Cp=chalcopyrite, Te=tetrahedrite, Qz=quartz, Ba=barite, Se=sericite, Co=carbonate

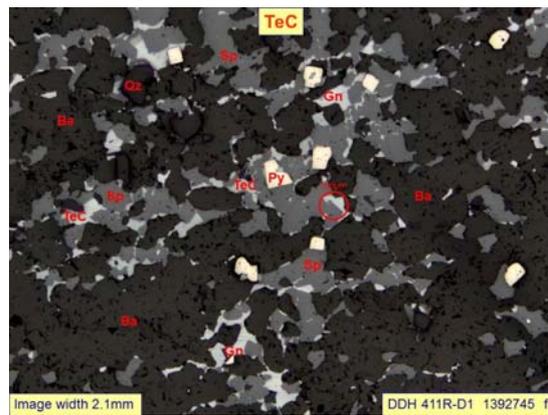
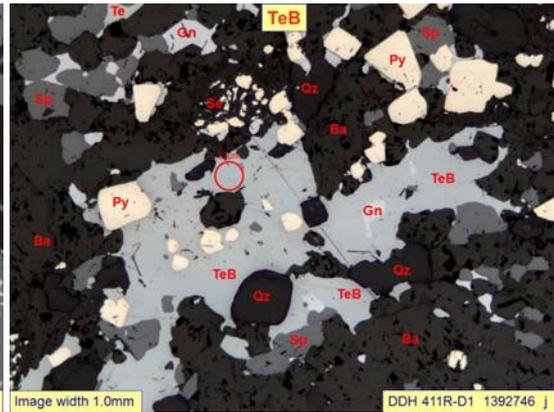
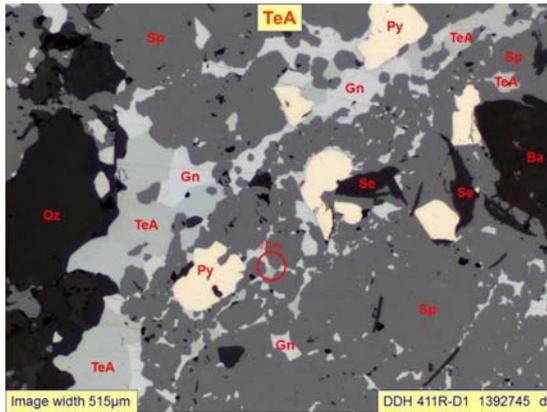


Tetrahedrite (Cu,Ag,Fe,Zn)₁₂(Sb,As)₄S₁₃

The following textural types (accounting for most of the *tetrahedrite*) are recognised:

| Texture | Description | ~% of tetrahedrite |
|---------|--|--------------------|
| A | Highly irregular grains <200um in annealed Sp, with Gn | 40-45 |
| B | Interstitial to Ba/Qz <1mm with Gn/Sp | 25 |
| C | Hosted by interstitial Sp <100um | 15 |

Py=pyrite, Sp=sphalerite, Gn=galena, Cp=chalcopyrite, Te=tetrahedrite, Qz=quartz, Ba=barite, Se=sericite, Co=carbonate

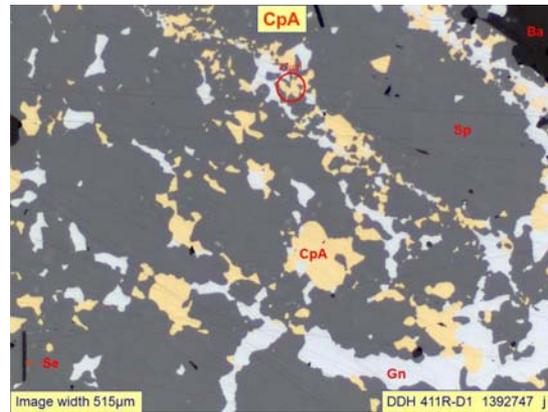


Chalcopyrite CuFeS_2

The following textural type (accounting for most of the *chalcopyrite*) is recognised:

| Texture | Description | ~% of chalcopyrite |
|---------|---|--------------------|
| A | Highly irregular grains <100um in annealed Sp, often with Te/Cp | 70 |

Py=pyrite, *Sp*=sphalerite, *Gn*=galena, *Cp*=chalcopyrite, *Te*=tetrahedrite, *Qz*=quartz, *Ba*=barite, *Se*=sericite, *Co*=carbonate



Concluding Remarks

The mineralisation at 3800N in DDH 411R-D1 as examined in the provided samples, is somewhat similar to baritic mineralisation examined by the author from the Fossey Zone at the south end of Hellyer. It is different from the normal Rosebery Mill Feed, having:

- High *barite* content, low *quartz* and *pyrite* content
- High *tetrahedrite* content
- Finer sulphide grainsize
- The economic sulphides less associated with *pyrite*

The observations made in this assessment strongly suggest the mineralisation at 3800N is from a lower-temperature source with the increased presence of low temperature minerals (*barite*, *tetrahedrite* and *galena*), and the decreased presence of the normal high temperature minerals (*pyrite*, *chalcopyrite*).

G.J.McArthur
Principal Mineralogist
20.7.12

**QUANTITATIVE
LOGGING
SUMMARIES**

DDH 411R-D1 #1392743

Total Scan

GJMcA 17.7.12

| | |
|-----------|-----------------|
| 53µm Mask | 100 % by weight |
|-----------|-----------------|

Average composition - all grains

| Py | Po | Sp | Gn | As | Cp | Te | Ga | n |
|-----|-----|-----|-----|-----|-----|-----|------|-----|
| 0.9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 99.1 | 100 |
| 22 | 0 | 0 | 0 | 0 | 0 | 0 | 99 | |

ASSAYS

| | SG | Cu | Pb | Zn | Ag | As | Fe |
|--------|------|-------|-------|-------|----|-------|-----|
| Calc'd | 2.79 | 0.00 | 0.0 | 0.0 | 1 | 0.0 | 3.0 |
| Actual | | <0.01 | <0.01 | <0.01 | <1 | <0.05 | 2.1 |

COMPOSITE PROPORTIONS

| | Py | Po | Sp | Gn | Cp | Te | Ga | |
|----------------|-----|----|----|----|----|----|-----|------|
| Mono | 0 | 0 | 0 | 0 | 0 | 0 | 97 | |
| Binary | 100 | 0 | 0 | 0 | 0 | 0 | 3 | |
| Ternary | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Quat.y+ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| #Grains | 4 | 0 | 0 | 0 | 0 | 0 | 100 | 1.04 |

BINARY ASSOCIATION MATRIX

| | Py | Po | Sp | Gn | Cp | Te | Ga |
|-----------|-----|----|----|----|----|----|-----|
| Py | | 0 | 0 | 0 | 0 | 0 | 100 |
| Po | 0 | | 0 | 0 | 0 | 0 | 0 |
| Sp | 0 | 0 | | 0 | 0 | 0 | 0 |
| Gn | 0 | 0 | 0 | | 0 | 0 | 0 |
| Cp | 0 | 0 | 0 | 0 | | 0 | 0 |
| Te | 0 | 0 | 0 | 0 | 0 | | 0 |
| Ga | 100 | 0 | 0 | 0 | 0 | 0 | |

TOTAL ASSOCIATION MATRIX

| | Py | Po | Sp | Gn | Cp | Te | Ga |
|-----------|----|----|----|----|----|----|-----|
| Py | | 0 | 0 | 0 | 0 | 0 | 100 |
| Po | 0 | | 0 | 0 | 0 | 0 | 0 |
| Sp | 0 | 0 | | 0 | 0 | 0 | 0 |
| Gn | 0 | 0 | 0 | | 0 | 0 | 0 |
| Cp | 0 | 0 | 0 | 0 | | 0 | 0 |
| Te | 0 | 0 | 0 | 0 | 0 | | 0 |
| Ga | 3 | 0 | 0 | 0 | 0 | 0 | |

of
all

DISTRIBUTION MATRIX

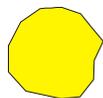
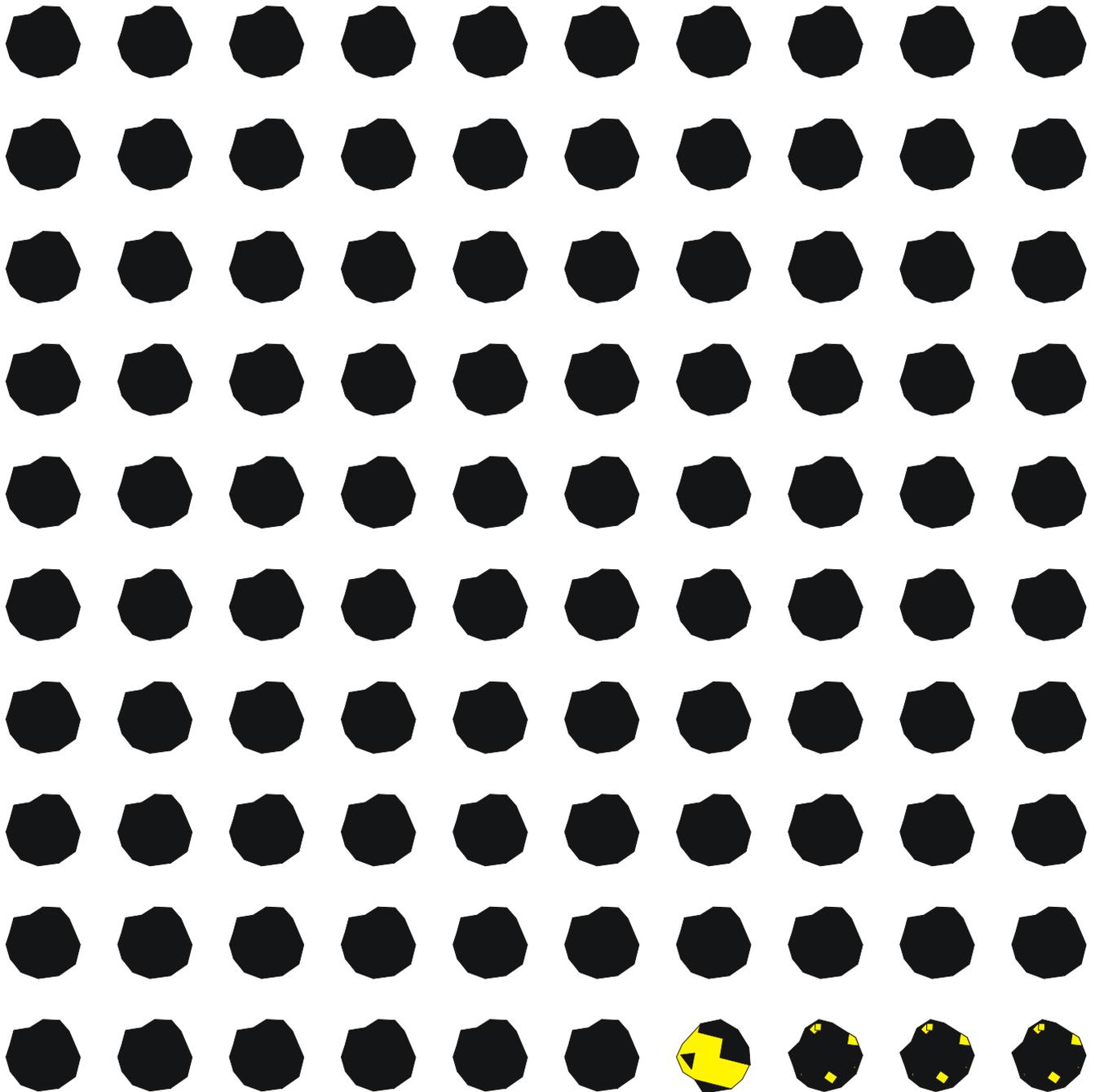
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|-----------|------|--------|----|----|----|----|----|-----|------|------|
| | | Py | Po | Sp | Gn | Cp | Te | Ga | | |
| Py | 0 | | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 |
| Po | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sp | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 |
| Gn | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 |
| Cp | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Te | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 |
| Ga | 97 | 3 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 |

MMG Exploration - Drillcore Mineragraphy

DDH 411R-D1
#1392743

53µm Mask

July 2012



Pyrite



Sphalerite



Galena



Chalcopyrite



Tetrahedrite



Barite



Gangue

DDH 411R-D1 #1392744

Total Scan

GJMcA 17.7.12

| | |
|-----------|-----------------|
| 53µm Mask | 100 % by weight |
|-----------|-----------------|

Average composition - all grains

| Py | Po | Sp | Gn | As | Cp | Te | Ga | n |
|-----|-----|-----|-----|-----|-----|-----|------|-----|
| 7.6 | 0.0 | 2.0 | 0.3 | 0.0 | 0.0 | 0.0 | 90.1 | 100 |
| 54 | 0 | 18 | 7 | 0 | 0 | 3 | 93 | |

ASSAYS

| | SG | Cu | Pb | Zn | Ag | As | Fe |
|--------|------|------|-----|-----|-----|-------|-----|
| Calc'd | 2.98 | 0.01 | 0.8 | 1.7 | 72 | 0.0 | 7.9 |
| Actual | | 0.15 | 3.1 | 6.2 | 110 | <0.05 | 5.1 |

COMPOSITE PROPORTIONS

| | Py | Po | Sp | Gn | Cp | Te | Ga | |
|---------|----|----|----|----|----|-----|----|------|
| Mono | 40 | 0 | 0 | 0 | 0 | 0 | 82 | |
| Binary | 48 | 0 | 93 | 59 | 0 | 0 | 14 | |
| Ternary | 12 | 0 | 7 | 41 | 0 | 100 | 4 | |
| Quat.y+ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| #Grains | 14 | 0 | 11 | 5 | 0 | 1 | 97 | 1.28 |

BINARY ASSOCIATION MATRIX

| | Py | Po | Sp | Gn | Cp | Te | Ga |
|----|----|----|----|----|----|----|-----|
| Py | | 0 | 0 | 0 | 0 | 0 | 100 |
| Po | 0 | | 0 | 0 | 0 | 0 | 0 |
| Sp | 0 | 0 | | 0 | 0 | 0 | 100 |
| Gn | 0 | 0 | 0 | | 0 | 0 | 100 |
| Cp | 0 | 0 | 0 | 0 | | 0 | 0 |
| Te | 0 | 0 | 0 | 0 | 0 | | 0 |
| Ga | 43 | 0 | 42 | 15 | 0 | 0 | |

TOTAL ASSOCIATION MATRIX

| | Py | Po | Sp | Gn | Cp | Te | Ga |
|----|----|----|-----|----|----|----|-----|
| Py | | 0 | 1 | 11 | 0 | 0 | 60 |
| Po | 0 | | 0 | 0 | 0 | 0 | 0 |
| Sp | 2 | 0 | | 4 | 0 | 1 | 100 |
| Gn | 6 | 0 | 35 | | 0 | 0 | 100 |
| Cp | 0 | 0 | 0 | 0 | | 0 | 0 |
| Te | 0 | 0 | 100 | 0 | 0 | | 100 |
| Ga | 7 | 0 | 10 | 4 | 0 | 1 | |

of
all

DISTRIBUTION MATRIX

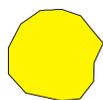
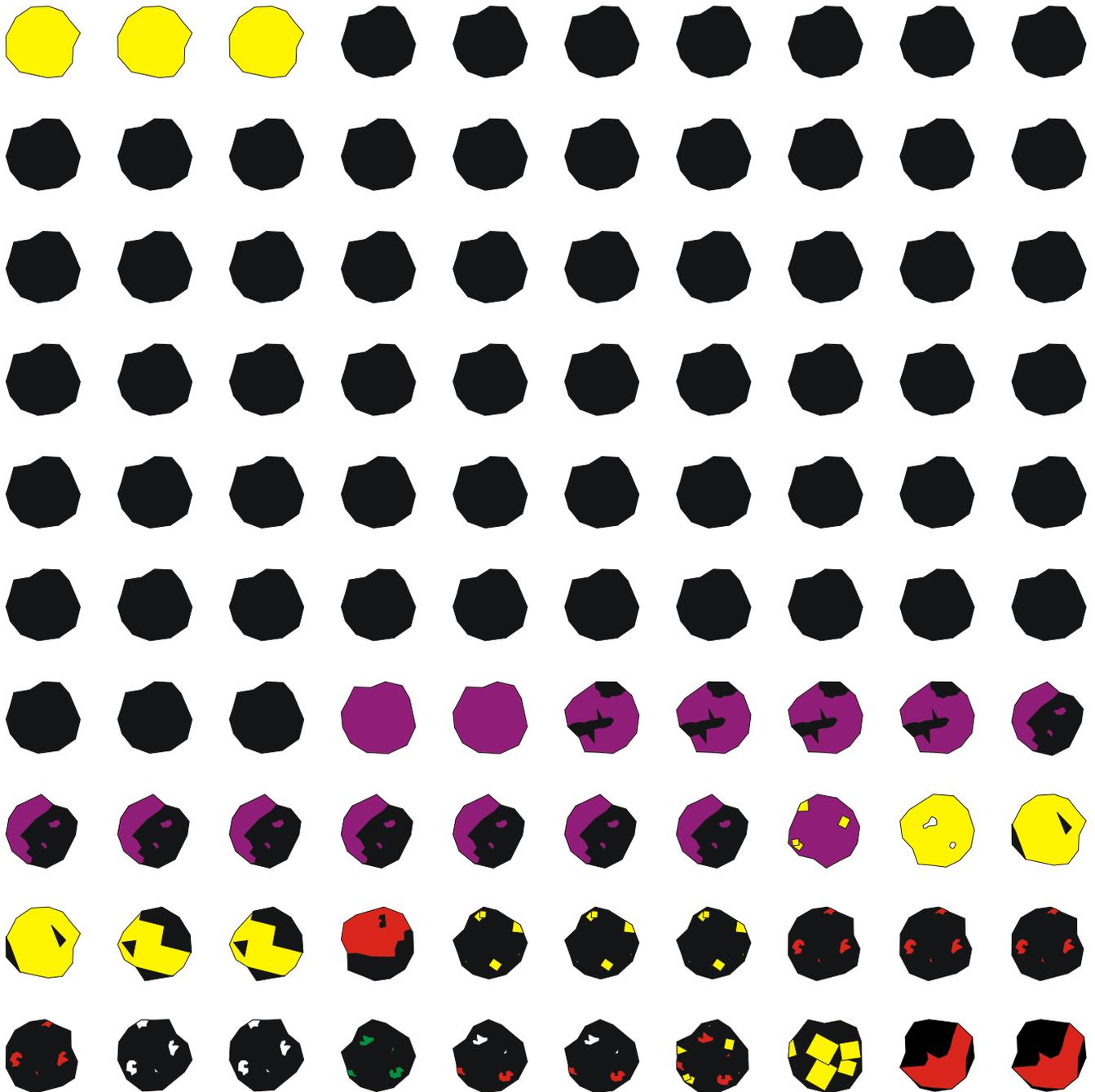
| | Free | Binary | | | | | | | Tern | Quat |
|----|------|--------|----|----|----|----|----|----|------|------|
| | | Py | Po | Sp | Gn | Cp | Te | Ga | | |
| Py | 40 | | 0 | 0 | 0 | 0 | 0 | 48 | 12 | 0 |
| Po | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sp | 0 | 0 | 0 | | 0 | 0 | 0 | 93 | 7 | 0 |
| Gn | 0 | 0 | 0 | 0 | | 0 | 0 | 59 | 41 | 0 |
| Cp | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Te | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 100 | 0 |
| Ga | 82 | 6 | 0 | 6 | 2 | 0 | 0 | | 4 | 0 |

MMG Exploration - Drillcore Mineragraphy

DDH 411R-D1
#1392744

53µm Mask

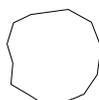
July 2012



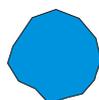
Pyrite



Sphalerite



Galena



Chalcopyrite



Tetrahedrite



Barite



Gangue

DDH 411R-D1 #1392745

Total Scan

GJMCA 17.7.12

| | |
|-----------|-----------------|
| 53µm Mask | 100 % by weight |
|-----------|-----------------|

Average composition - all grains

| Py | Po | Sp | Gn | As | Cp | Te | Ga | n |
|-----|-----|------|-----|-----|-----|-----|------|-----|
| 8.2 | 0.0 | 14.1 | 2.4 | 0.0 | 0.0 | 2.0 | 72.3 | 100 |
| 41 | 0 | 37 | 9 | 0 | 0 | 22 | 79 | |

ASSAYS

| | SG | Cu | Pb | Zn | Ag | As | Fe |
|--------|------|------|-----|------|------|-------|-----|
| Calc'd | 3.29 | 0.81 | 4.9 | 11.1 | 2964 | 0.1 | 8.1 |
| Actual | | 0.32 | 7.2 | 12.1 | 790 | <0.05 | 3.2 |

COMPOSITE PROPORTIONS

| | Py | Po | Sp | Gn | Cp | Te | Ga | |
|----------------|----|----|----|----|----|----|----|------|
| Mono | 12 | 0 | 7 | 0 | 0 | 0 | 55 | |
| Binary | 75 | 0 | 30 | 21 | 0 | 0 | 29 | |
| Ternary | 11 | 0 | 45 | 64 | 0 | 50 | 13 | |
| Quat.y+ | 2 | 0 | 18 | 15 | 0 | 50 | 3 | |
| #Grains | 20 | 0 | 38 | 28 | 0 | 9 | 92 | 1.87 |

BINARY ASSOCIATION MATRIX

| | Py | Po | Sp | Gn | Cp | Te | Ga |
|-----------|----|----|----|----|----|----|----|
| Py | | 0 | 15 | 15 | 0 | 0 | 70 |
| Po | 0 | | 0 | 0 | 0 | 0 | 0 |
| Sp | 1 | 0 | | 23 | 0 | 0 | 76 |
| Gn | 20 | 0 | 10 | | 0 | 0 | 70 |
| Cp | 0 | 0 | 0 | 0 | | 0 | 0 |
| Te | 0 | 0 | 0 | 0 | 0 | | 0 |
| Ga | 36 | 0 | 46 | 17 | 0 | 0 | |

TOTAL ASSOCIATION MATRIX

| | Py | Po | Sp | Gn | Cp | Te | Ga |
|-----------|----|----|----|----|----|----|----|
| Py | | 0 | 22 | 15 | 0 | 1 | 64 |
| Po | 0 | | 0 | 0 | 0 | 0 | 0 |
| Sp | 10 | 0 | | 69 | 0 | 19 | 76 |
| Gn | 12 | 0 | 79 | | 0 | 26 | 77 |
| Cp | 0 | 0 | 0 | 0 | | 0 | 0 |
| Te | 18 | 0 | 82 | 52 | 0 | | 99 |
| Ga | 13 | 0 | 26 | 19 | 0 | 5 | |

of
all

DISTRIBUTION MATRIX

| | Free | Binary | | | | | | | Fern | Quat |
|-----------|------|--------|----|----|----|----|----|----|------|------|
| | | Py | Po | Sp | Gn | Cp | Te | Ga | | |
| Py | 12 | | 0 | 12 | 11 | 0 | 0 | 53 | 11 | 2 |
| Po | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sp | 7 | 0 | 0 | | 7 | 0 | 0 | 23 | 45 | 18 |
| Gn | 0 | 4 | 0 | 2 | | 0 | 0 | 14 | 64 | 15 |
| Cp | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Te | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 50 | 50 |
| Ga | 55 | 11 | 0 | 14 | 5 | 0 | 0 | | 13 | 3 |

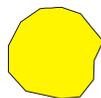
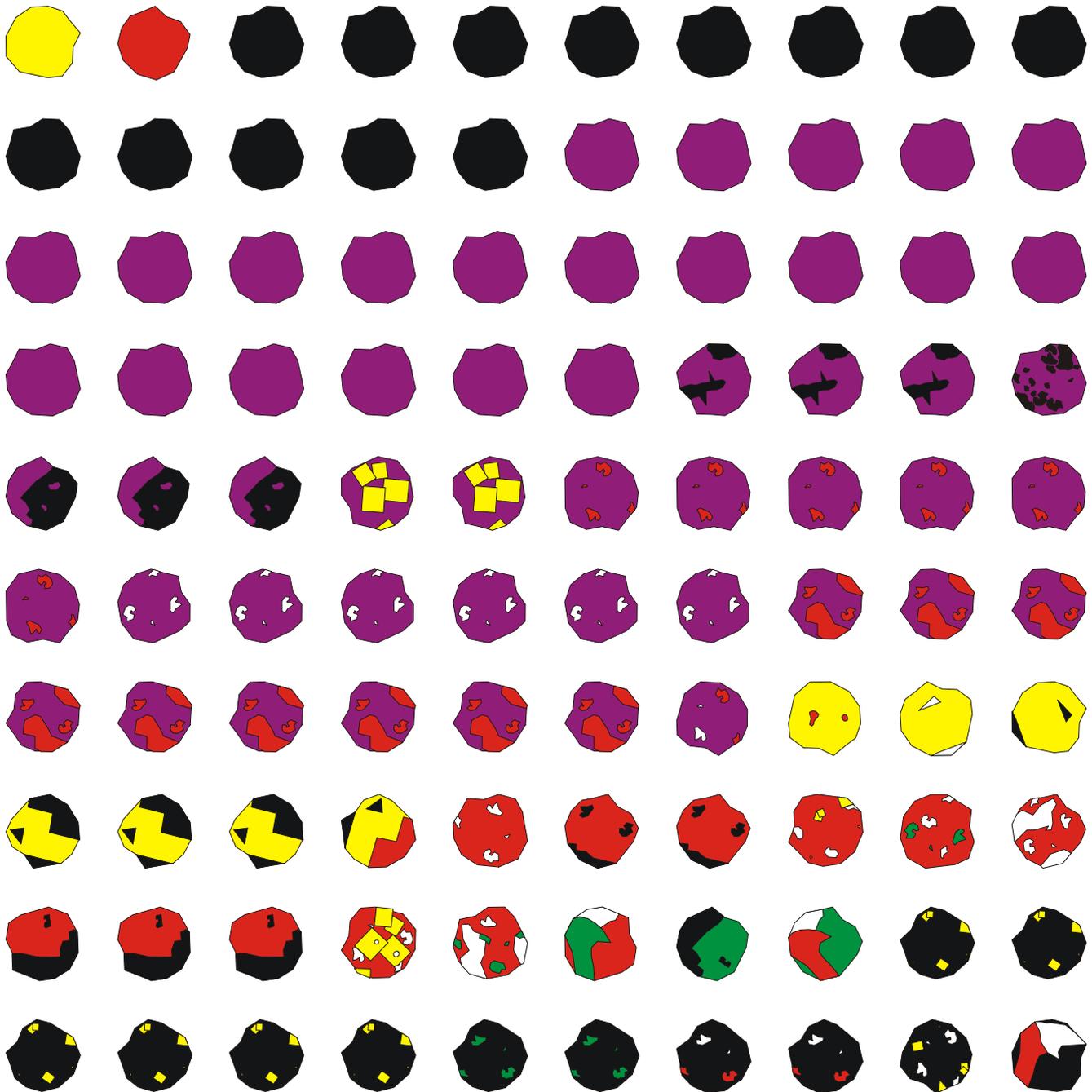
MMG Exploration - Drillcore Mineragraphy

DDH 411R-D1
#1392745

53µm Mask

July

2012



Pyrite



Sphalerite



Galena



Chalcopyrite



Tetrahedrite



Barite



Gangue

DDH 411R-D1 #1392746

Total Scan

GJMCA 18.7.12

| | |
|-----------|-----------------|
| 53µm Mask | 100 % by weight |
|-----------|-----------------|

Average composition - all grains

| Py | Po | Sp | Gn | As | Cp | Te | Ga | n |
|-----|-----|------|-----|-----|-----|-----|------|-----|
| 5.2 | 0.0 | 12.5 | 2.1 | 0.0 | 0.0 | 2.1 | 78.1 | 100 |
| 35 | 0 | 38 | 9 | 0 | 0 | 43 | 79 | |

ASSAYS

| | SG | Cu | Pb | Zn | Ag | As | Fe |
|--------|------|------|-----|------|------|-------|-----|
| Calc'd | 3.19 | 0.90 | 4.3 | 10.1 | 3267 | 0.1 | 6.1 |
| Actual | | 0.24 | 6.0 | 8.6 | 341 | <0.05 | 3.4 |

COMPOSITE PROPORTIONS

| | Py | Po | Sp | Gn | Cp | Te | Ga | |
|---------|----|----|----|----|----|----|----|------|
| Mono | 0 | 0 | 8 | 0 | 0 | 0 | 70 | |
| Binary | 24 | 0 | 24 | 5 | 0 | 45 | 16 | |
| Ternary | 65 | 0 | 52 | 80 | 0 | 46 | 10 | |
| Quat.y+ | 11 | 0 | 16 | 15 | 0 | 10 | 4 | |
| #Grains | 15 | 0 | 33 | 24 | 0 | 5 | 99 | 1.76 |

BINARY ASSOCIATION MATRIX

| | Py | Po | Sp | Gn | Cp | Te | Ga |
|----|----|----|----|----|----|----|-----|
| Py | | 0 | 0 | 0 | 0 | 0 | 100 |
| Po | 0 | | 0 | 0 | 0 | 0 | 0 |
| Sp | 0 | 0 | | 0 | 0 | 0 | 100 |
| Gn | 0 | 0 | 0 | | 0 | 0 | 100 |
| Cp | 0 | 0 | 0 | 0 | | 0 | 0 |
| Te | 0 | 0 | 0 | 0 | 0 | | 100 |
| Ga | 22 | 0 | 63 | 15 | 0 | 0 | |

TOTAL ASSOCIATION MATRIX

| | Py | Po | Sp | Gn | Cp | Te | Ga |
|----|----|----|----|----|----|----|-----|
| Py | | 0 | 28 | 52 | 0 | 7 | 100 |
| Po | 0 | | 0 | 0 | 0 | 0 | 0 |
| Sp | 15 | 0 | | 58 | 0 | 11 | 92 |
| Gn | 18 | 0 | 81 | | 0 | 12 | 100 |
| Cp | 0 | 0 | 0 | 0 | | 0 | 0 |
| Te | 9 | 0 | 6 | 50 | 0 | | 100 |
| Ga | 9 | 0 | 22 | 14 | 0 | 1 | |

of
all

DISTRIBUTION MATRIX

| | Free | Binary | | | | | | | Tern | Quat |
|----|------|--------|----|----|----|----|----|----|------|------|
| | | Py | Po | Sp | Gn | Cp | Te | Ga | | |
| Py | 0 | | 0 | 0 | 0 | 0 | 0 | 24 | 65 | 11 |
| Po | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sp | 8 | 0 | 0 | | 0 | 0 | 0 | 24 | 52 | 16 |
| Gn | 0 | 0 | 0 | 0 | | 0 | 0 | 5 | 80 | 15 |
| Cp | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Te | 0 | 0 | 0 | 0 | 0 | 0 | | 45 | 46 | 10 |
| Ga | 70 | 4 | 0 | 10 | 2 | 0 | 0 | | 10 | 4 |

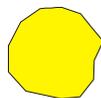
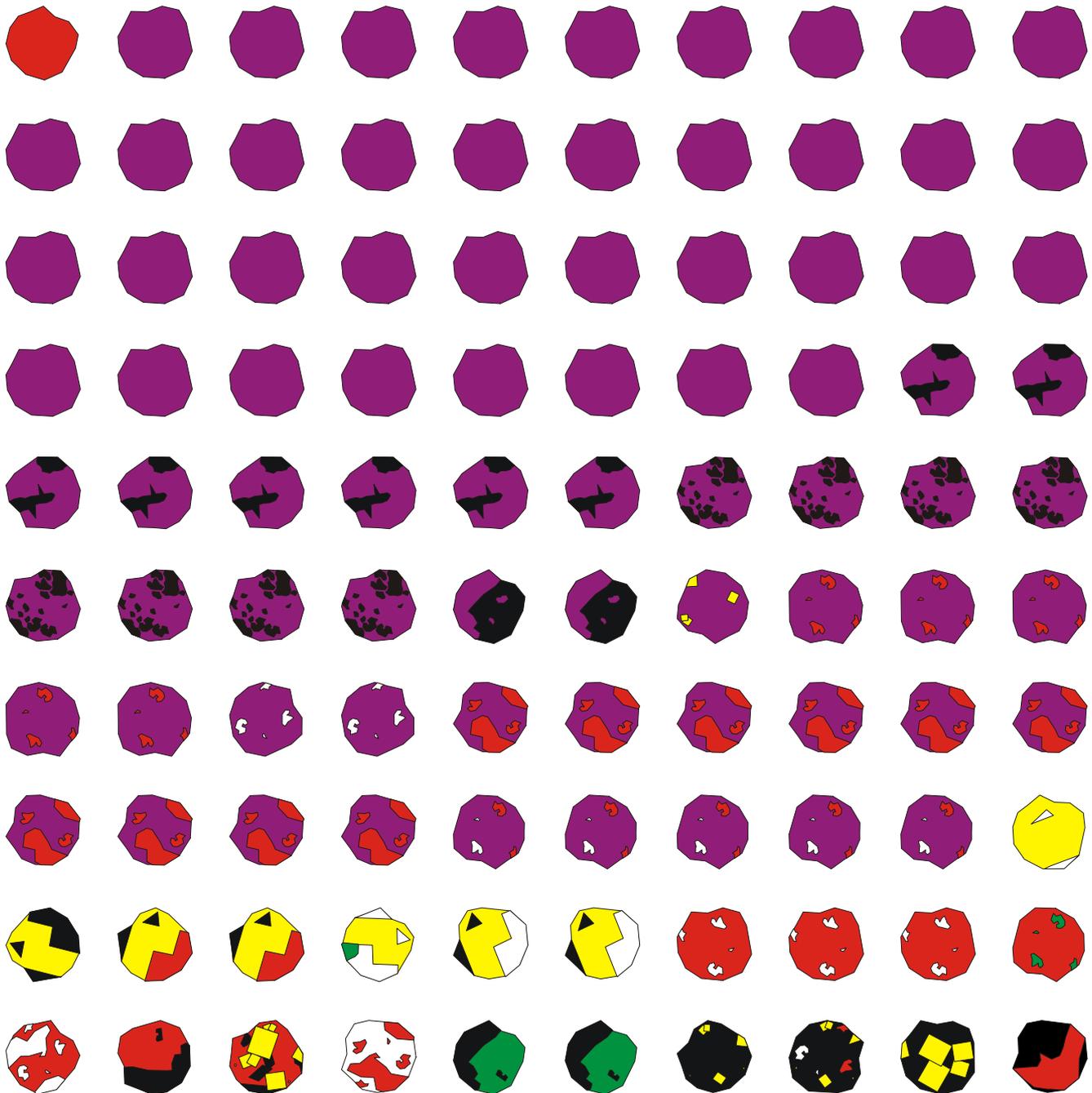
MMG Exploration - Drillcore Mineragraphy

DDH 411R-D1
#1392746

53µm Mask

July

2012



Pyrite



Sphalerite



Galena



Chalcopyrite



Tetrahedrite



Barite



Gangue

DDH 411R-D1 #1392747

Total Scan

GJMcA 18.7.12

| | |
|-----------|-----------------|
| 53µm Mask | 100 % by weight |
|-----------|-----------------|

Average composition - all grains

| Py | Po | Sp | Gn | As | Cp | Te | Ga | n |
|-----|-----|------|------|-----|-----|-----|------|-----|
| 5.0 | 0.0 | 66.1 | 13.9 | 0.0 | 3.4 | 1.0 | 10.7 | 100 |
| 56 | 0 | 70 | 21 | 0 | 12 | 33 | 40 | |

ASSAYS

| | SG | Cu | Pb | Zn | Ag | As | Fe |
|--------|------|------|------|------|------|-----|-----|
| Calc'd | 4.49 | 1.38 | 20.3 | 37.7 | 1523 | 0.1 | 6.2 |
| Actual | | 1.29 | 20.0 | 38.6 | 530 | 0.1 | 3.1 |

COMPOSITE PROPORTIONS

| | Py | Po | Sp | Gn | Cp | Te | Ga | |
|---------|----|----|----|----|----|----|----|------|
| Mono | 60 | 0 | 23 | 0 | 0 | 0 | 19 | |
| Binary | 8 | 0 | 40 | 48 | 24 | 0 | 43 | |
| Ternary | 31 | 0 | 32 | 48 | 47 | 50 | 33 | |
| Quat.y+ | 1 | 0 | 5 | 4 | 29 | 50 | 6 | |
| #Grains | 9 | 0 | 94 | 65 | 29 | 3 | 27 | 2.27 |

BINARY ASSOCIATION MATRIX

| | Py | Po | Sp | Gn | Cp | Te | Ga |
|----|----|----|-----|----|----|----|----|
| Py | | 0 | 100 | 0 | 0 | 0 | 0 |
| Po | 0 | | 0 | 0 | 0 | 0 | 0 |
| Sp | 2 | 0 | | 73 | 16 | 0 | 9 |
| Gn | 0 | 0 | 99 | | 0 | 0 | 1 |
| Cp | 0 | 0 | 100 | 0 | | 0 | 0 |
| Te | 0 | 0 | 0 | 0 | 0 | | 0 |
| Ga | 0 | 0 | 79 | 21 | 0 | 0 | |

TOTAL ASSOCIATION MATRIX

| | Py | Po | Sp | Gn | Cp | Te | Ga |
|----|----|----|-----|-----|----|----|----|
| Py | | 0 | 40 | 12 | 0 | 0 | 21 |
| Po | 0 | | 0 | 0 | 0 | 0 | 0 |
| Sp | 4 | 0 | | 65 | 31 | 3 | 16 |
| Gn | 4 | 0 | 100 | | 27 | 2 | 24 |
| Cp | 0 | 0 | 100 | 72 | | 3 | 31 |
| Te | 0 | 0 | 100 | 100 | 50 | | 0 |
| Ga | 7 | 0 | 72 | 40 | 6 | 0 | |

of all

DISTRIBUTION MATRIX

| | Free | Binary | | | | | | | Tern | Quat |
|----|------|--------|----|----|----|----|----|----|------|------|
| | | Py | Po | Sp | Gn | Cp | Te | Ga | | |
| Py | 60 | | 0 | 8 | 0 | 0 | 0 | 0 | 31 | 1 |
| Po | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sp | 23 | 1 | 0 | | 29 | 6 | 0 | 4 | 32 | 5 |
| Gn | 0 | 0 | 0 | 48 | | 0 | 0 | 0 | 48 | 4 |
| Cp | 0 | 0 | 0 | 24 | 0 | | 0 | 0 | 47 | 29 |
| Te | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 50 | 50 |
| Ga | 19 | 0 | 0 | 34 | 9 | 0 | 0 | | 33 | 6 |

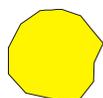
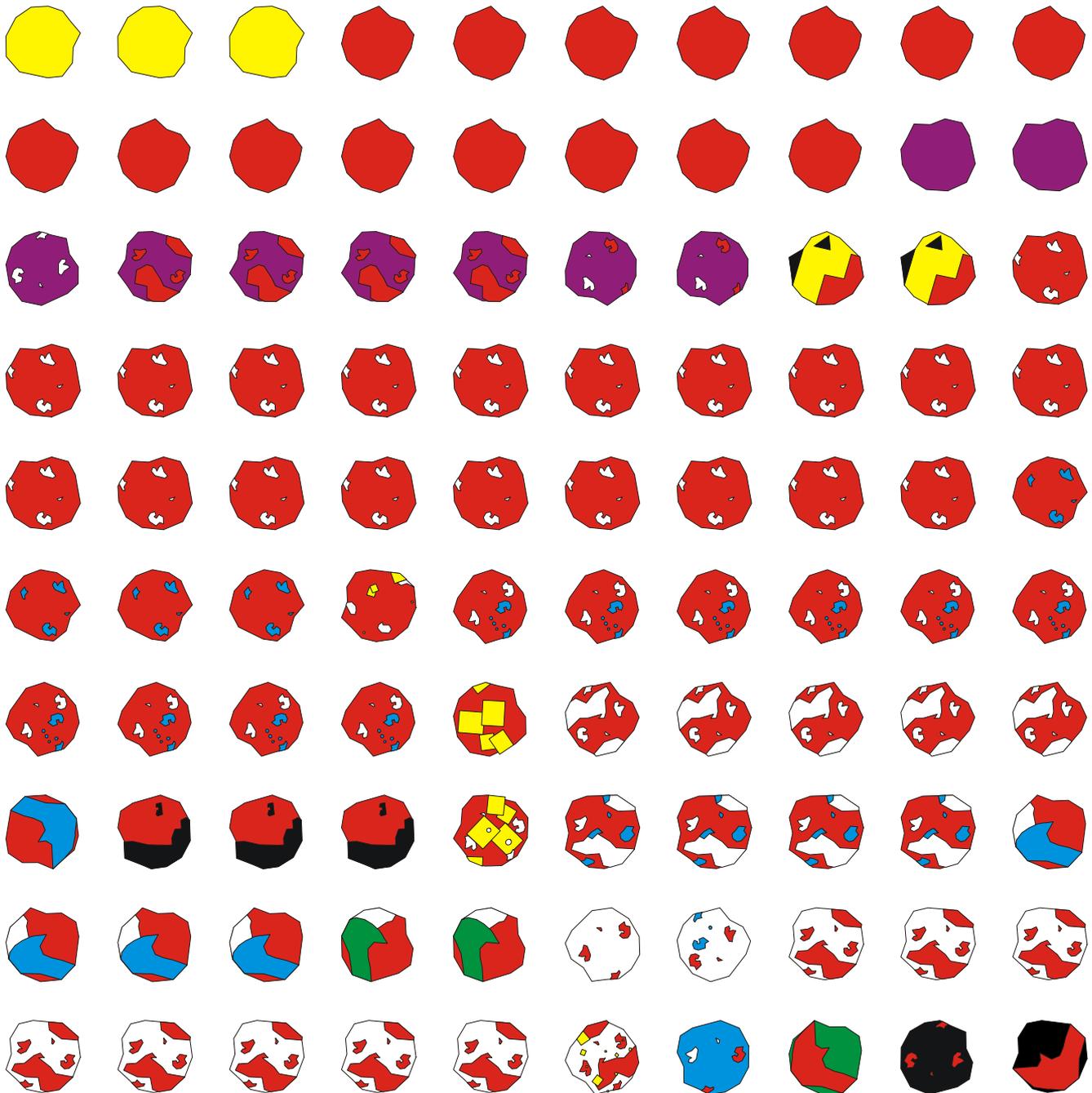
MMG Exploration - Drillcore Mineragraphy

DDH 411R-D1
#1392747

53µm Mask

July

2012



Pyrite



Sphalerite



Galena



Chalcopyrite



Tetrahedrite



Barite



Gangue

DDH 411R-D1 #1392748

Total Scan

GJMCA 18.7.12

| | |
|-----------|-----------------|
| 53µm Mask | 100 % by weight |
|-----------|-----------------|

Average composition - all grains

| Py | Po | Sp | Gn | As | Cp | Te | Ga | n |
|-----|-----|------|-----|-----|-----|-----|------|-----|
| 4.7 | 0.0 | 12.3 | 2.4 | 0.0 | 0.0 | 0.4 | 80.2 | 100 |
| 36 | 0 | 49 | 13 | 0 | 0 | 15 | 91 | |

ASSAYS

| | SG | Cu | Pb | Zn | Ag | As | Fe |
|--------|------|------|-----|-----|-----|-------|-----|
| Calc'd | 3.16 | 0.19 | 5.0 | 9.9 | 777 | 0.0 | 5.7 |
| Actual | | 0.07 | 3.6 | 6.9 | 590 | <0.05 | 4.5 |

COMPOSITE PROPORTIONS

| | Py | Po | Sp | Gn | Cp | Te | Ga | |
|---------|----|----|----|----|----|----|----|------|
| Mono | 21 | 0 | 16 | 0 | 0 | 0 | 81 | |
| Binary | 54 | 0 | 42 | 73 | 0 | 0 | 11 | |
| Ternary | 13 | 0 | 38 | 24 | 0 | 20 | 8 | |
| Quat.y+ | 0 | 0 | 1 | 2 | 0 | 80 | 1 | |
| #Grains | 13 | 0 | 25 | 18 | 0 | 3 | 88 | 1.47 |

BINARY ASSOCIATION MATRIX

| | Py | Po | Sp | Gn | Cp | Te | Ga |
|----|----|----|----|----|----|----|-----|
| Py | | 0 | 0 | 0 | 0 | 0 | 100 |
| Po | 0 | | 0 | 0 | 0 | 0 | 0 |
| Sp | 0 | 0 | | 62 | 0 | 0 | 38 |
| Gn | 0 | 0 | 49 | | 0 | 0 | 51 |
| Cp | 0 | 0 | 0 | 0 | | 0 | 0 |
| Te | 0 | 0 | 0 | 0 | 0 | | 0 |
| Ga | 40 | 0 | 59 | 1 | 0 | 0 | |

TOTAL ASSOCIATION MATRIX

| | Py | Po | Sp | Gn | Cp | Te | Ga |
|----|----|----|-----|----|----|----|----|
| Py | | 0 | 16 | 24 | 0 | 0 | 62 |
| Po | 0 | | 0 | 0 | 0 | 0 | 0 |
| Sp | 24 | 0 | | 67 | 0 | 8 | 28 |
| Gn | 14 | 0 | 60 | | 0 | 10 | 46 |
| Cp | 0 | 0 | 0 | 0 | | 0 | 0 |
| Te | 0 | 0 | 100 | 95 | 0 | | 84 |
| Ga | 6 | 0 | 13 | 7 | 0 | 2 | |

of
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DISTRIBUTION MATRIX

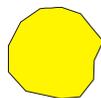
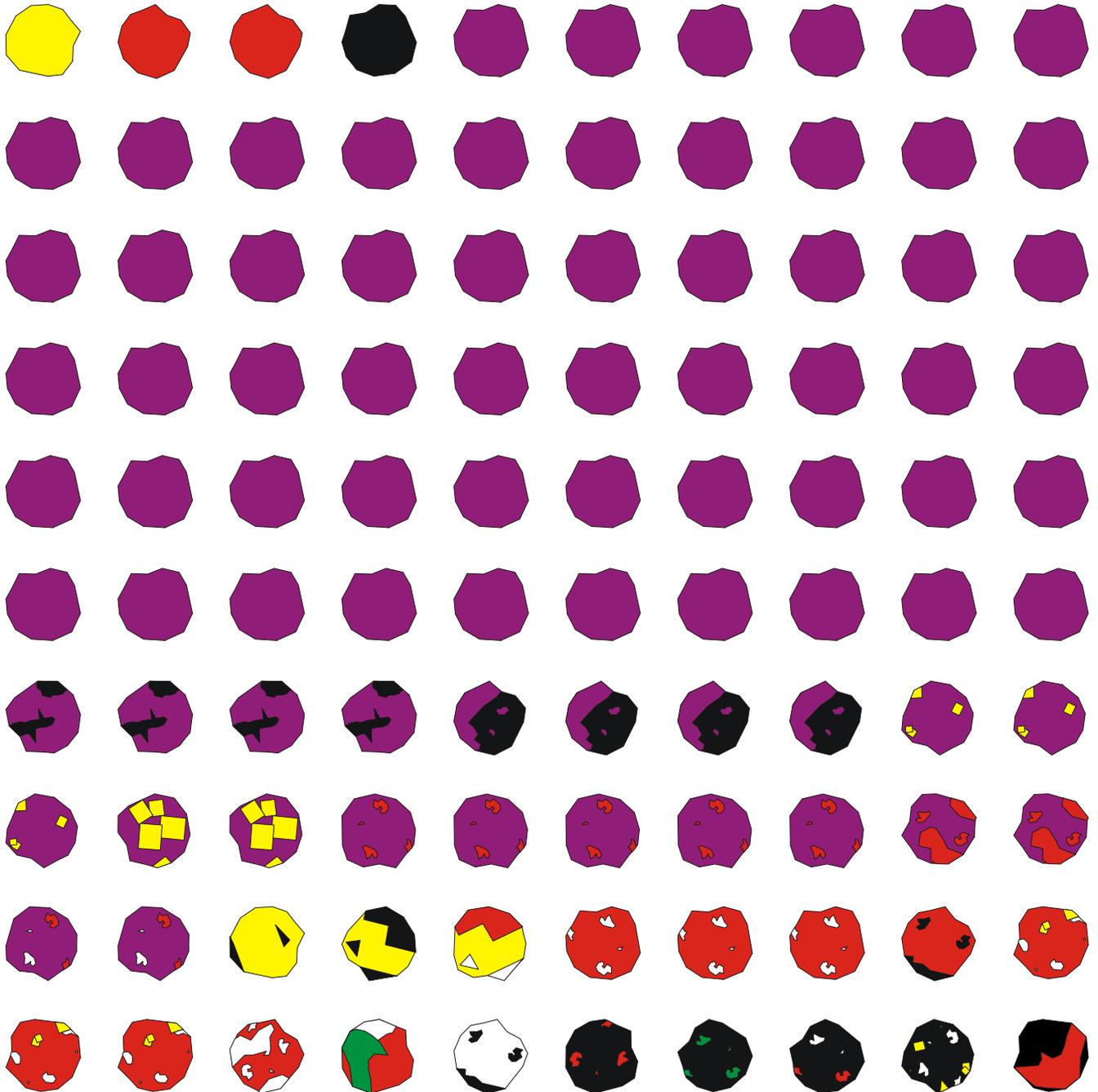
| | Free | Binary | | | | | | | Tern | Quat |
|----|------|--------|----|----|----|----|----|----|------|------|
| | | Py | Po | Sp | Gn | Cp | Te | Ga | | |
| Py | 21 | | 0 | 0 | 0 | 0 | 0 | 54 | 13 | 0 |
| Po | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sp | 16 | 0 | 0 | | 26 | 0 | 0 | 16 | 38 | 1 |
| Gn | 0 | 0 | 0 | 35 | | 0 | 0 | 37 | 24 | 2 |
| Cp | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Te | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 20 | 80 |
| Ga | 81 | 4 | 0 | 6 | 0 | 0 | 0 | | 8 | 1 |

MMG Exploration - Drillcore Mineragraphy

DDH 411R-D1
#1392748

53µm Mask

July 2012



Pyrite



Sphalerite



Galena



Chalcopyrite



Tetrahedrite



Barite



Gangue

DDH 411R-D1 #1392749

Total Scan

GJMCA 18.7.12

| | |
|-----------|-----------------|
| 53µm Mask | 100 % by weight |
|-----------|-----------------|

Average composition - all grains

| Py | Po | Sp | Gn | As | Cp | Te | Ga | n |
|-----|-----|-----|-----|-----|-----|-----|------|-----|
| 0.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 99.5 | 100 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 99 | |

ASSAYS

| | SG | Cu | Pb | Zn | Ag | As | Fe |
|--------|------|------|-------|-----|----|-------|-----|
| Calc'd | 2.78 | 0.00 | 0.0 | 0.0 | 1 | 0.0 | 2.7 |
| Actual | | 0.02 | <0.01 | 0.0 | 3 | <0.05 | 0.8 |

COMPOSITE PROPORTIONS

| | Py | Po | Sp | Gn | Cp | Te | Ga | |
|---------|-----|----|----|----|----|----|-----|------|
| Mono | 0 | 0 | 0 | 0 | 0 | 0 | 95 | |
| Binary | 100 | 0 | 0 | 0 | 0 | 0 | 5 | |
| Ternary | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Quat.y+ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| #Grains | 5 | 0 | 0 | 0 | 0 | 0 | 100 | 1.05 |

BINARY ASSOCIATION MATRIX

| | Py | Po | Sp | Gn | Cp | Te | Ga |
|----|-----|----|----|----|----|----|-----|
| Py | | 0 | 0 | 0 | 0 | 0 | 100 |
| Po | 0 | | 0 | 0 | 0 | 0 | 0 |
| Sp | 0 | 0 | | 0 | 0 | 0 | 0 |
| Gn | 0 | 0 | 0 | | 0 | 0 | 0 |
| Cp | 0 | 0 | 0 | 0 | | 0 | 0 |
| Te | 0 | 0 | 0 | 0 | 0 | | 0 |
| Ga | 100 | 0 | 0 | 0 | 0 | 0 | |

TOTAL ASSOCIATION MATRIX

| | Py | Po | Sp | Gn | Cp | Te | Ga |
|----|----|----|----|----|----|----|-----|
| Py | | 0 | 0 | 0 | 0 | 0 | 100 |
| Po | 0 | | 0 | 0 | 0 | 0 | 0 |
| Sp | 0 | 0 | | 0 | 0 | 0 | 0 |
| Gn | 0 | 0 | 0 | | 0 | 0 | 0 |
| Cp | 0 | 0 | 0 | 0 | | 0 | 0 |
| Te | 0 | 0 | 0 | 0 | 0 | | 0 |
| Ga | 5 | 0 | 0 | 0 | 0 | 0 | |

of
all

DISTRIBUTION MATRIX

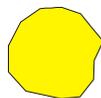
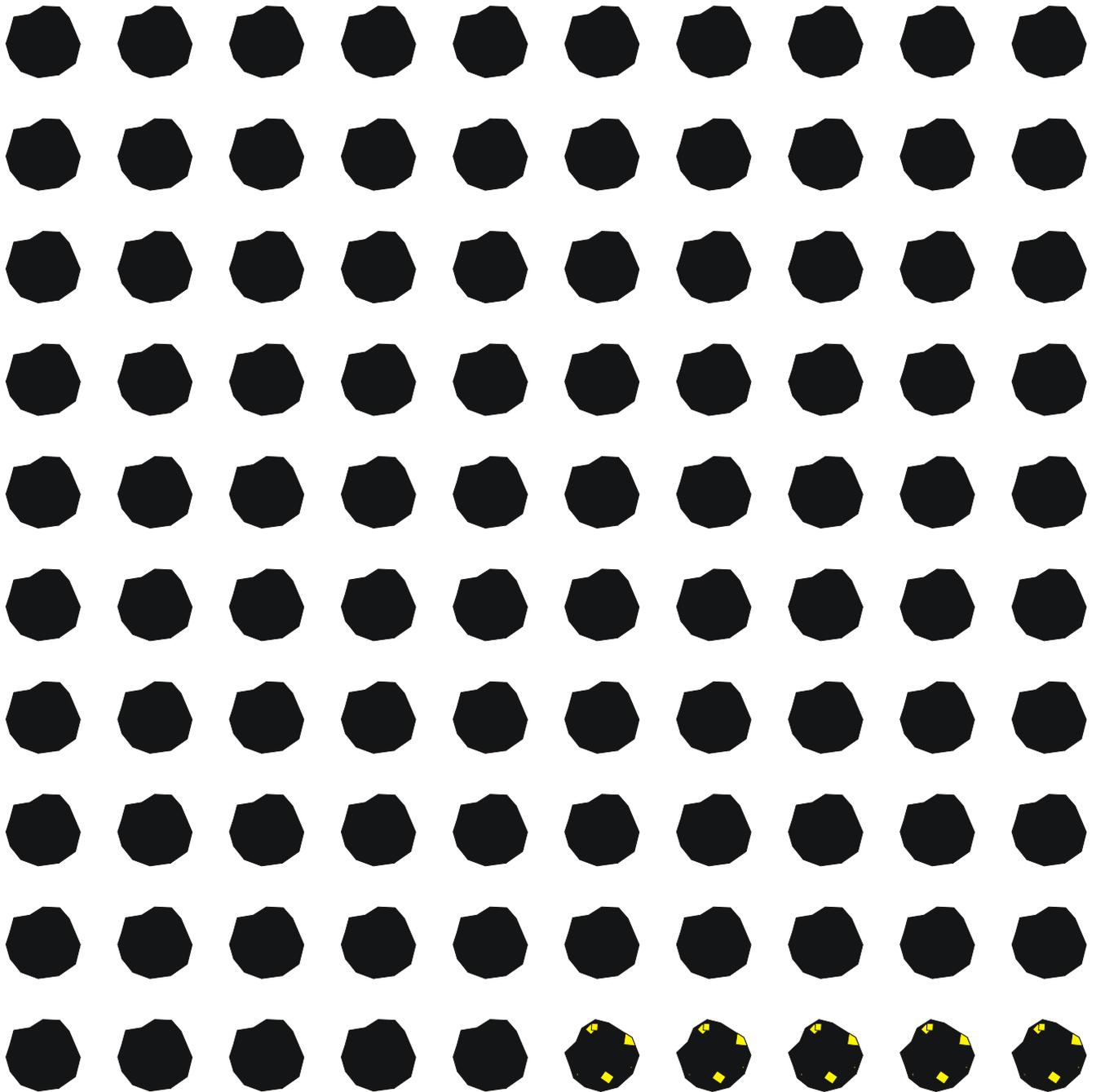
| | Free | Binary | | | | | | | Tern | Quat |
|----|------|--------|----|----|----|----|----|-----|------|------|
| | | Py | Po | Sp | Gn | Cp | Te | Ga | | |
| Py | 0 | | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 |
| Po | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sp | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 |
| Gn | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 |
| Cp | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| Te | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 |
| Ga | 95 | 5 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 |

MMG Exploration - Drillcore Mineragraphy

DDH 411R-D1
#1392749

53µm Mask

July 2012



Pyrite



Sphalerite



Galena



Chalcopyrite



Tetrahedrite



Barite



Gangue

**DETAILED
ANNOTATED
PHOTOMICROGRAPHS**

Sample Scan

Offcut Assay

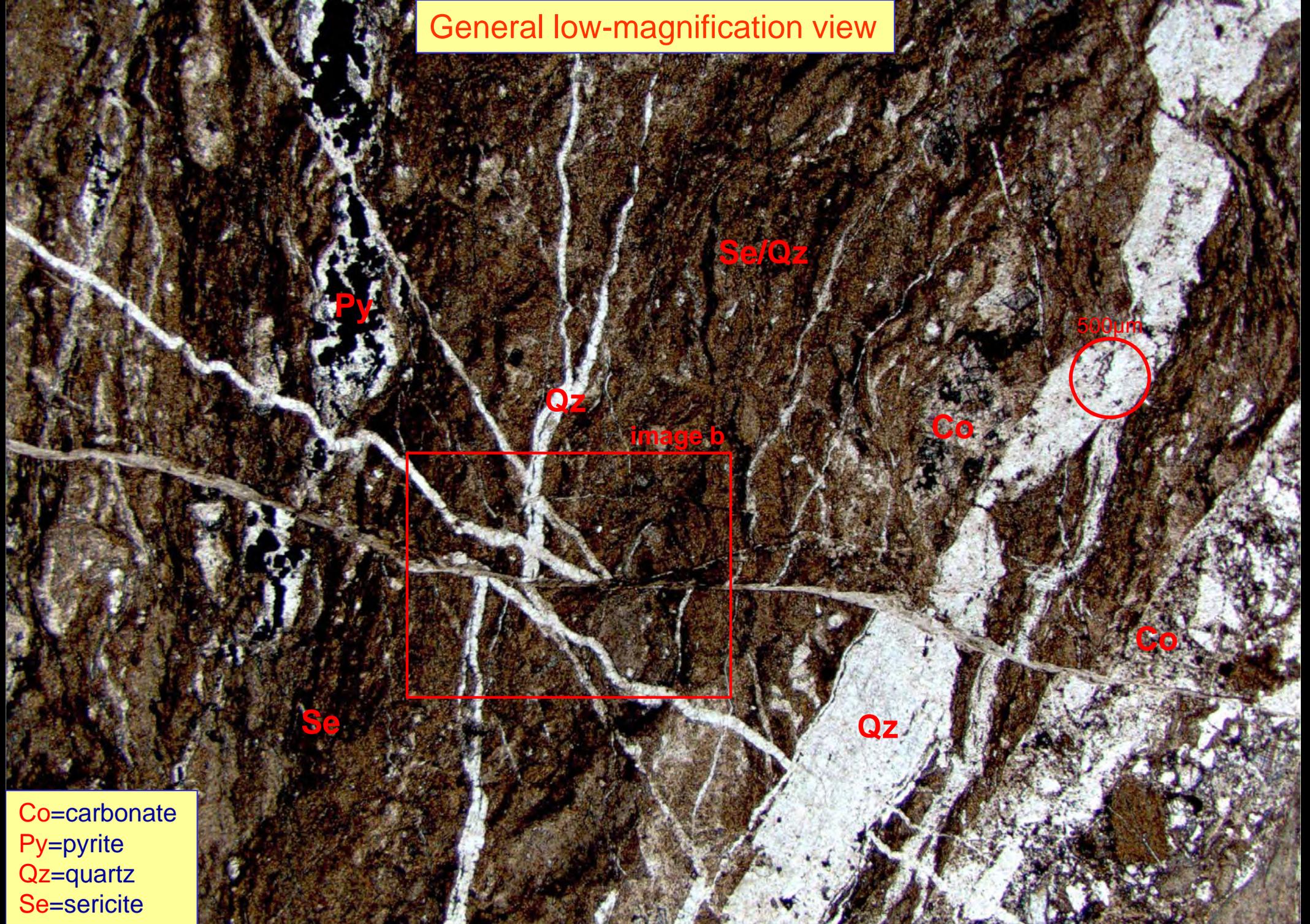
<0.01%Cu, <0.01%Pb, <0.01%Zn, 0.47%Ba, <0.05%As, 2.12%Fe, <1ppmAg



Image width ~55mm

DDH 411R-D1 1392743

General low-magnification view



Co=carbonate
Py=pyrite
Qz=quartz
Se=sericite

Image width 8.2mm

Transmitted Light – uncrossed nicols

DDH411R-D1 1392743 a

Quartz veinlets

Se/Qz

106µm

Qz

Se

Se/Qz

Image width 2.1mm

Transmitted Light – uncrossed nicols

DDH411R-D1 1392743 b

Rare pyrite aggregates

Qz

Qz

Co

106µm

Py

Qz

Se

Co

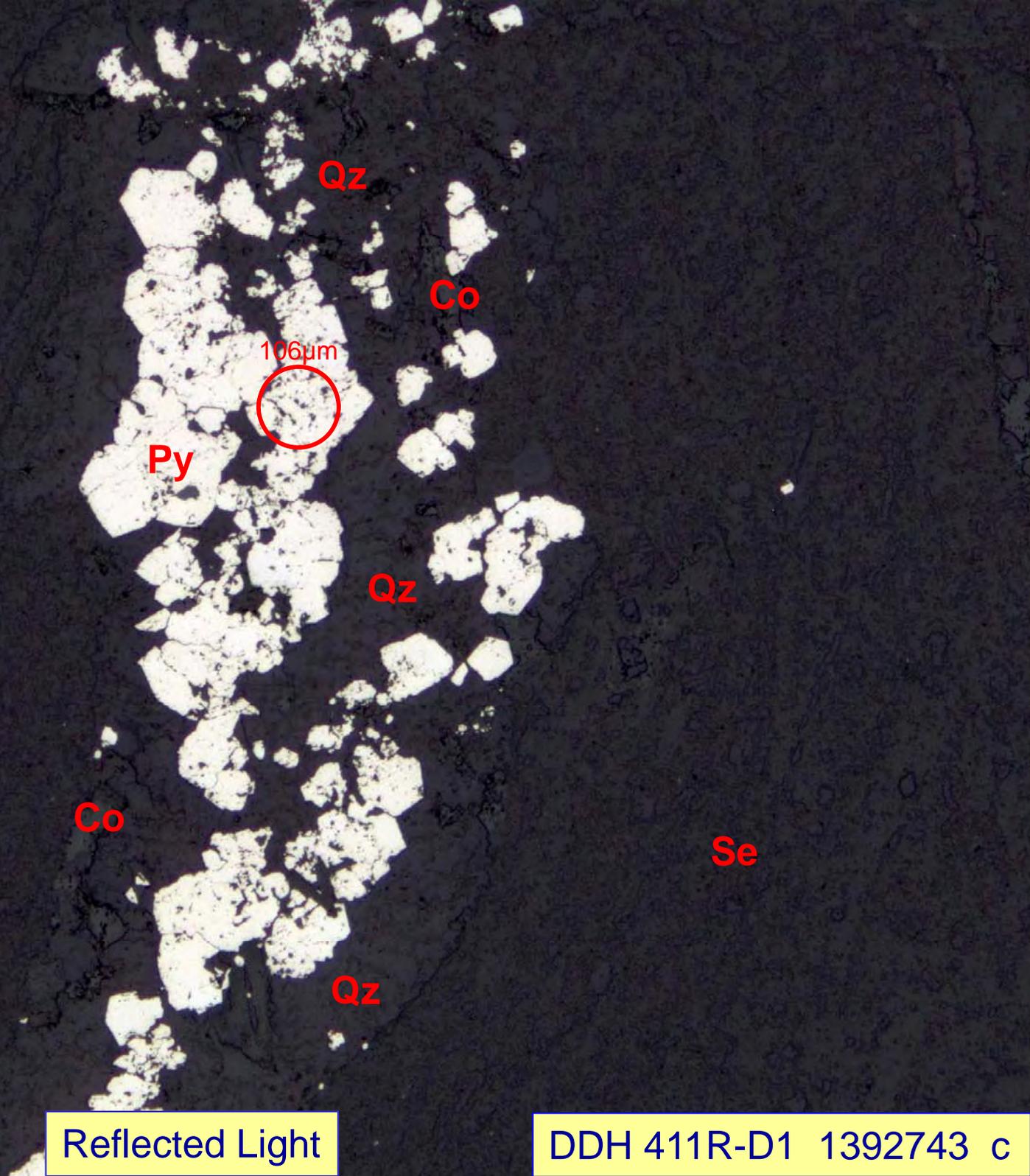
Se

Qz

Image width 2.1mm

Reflected Light

DDH 411R-D1 1392743 c



Finer-grained pyrite in sericite

Qz

106µm

Se

Se

Se

Py

Qz

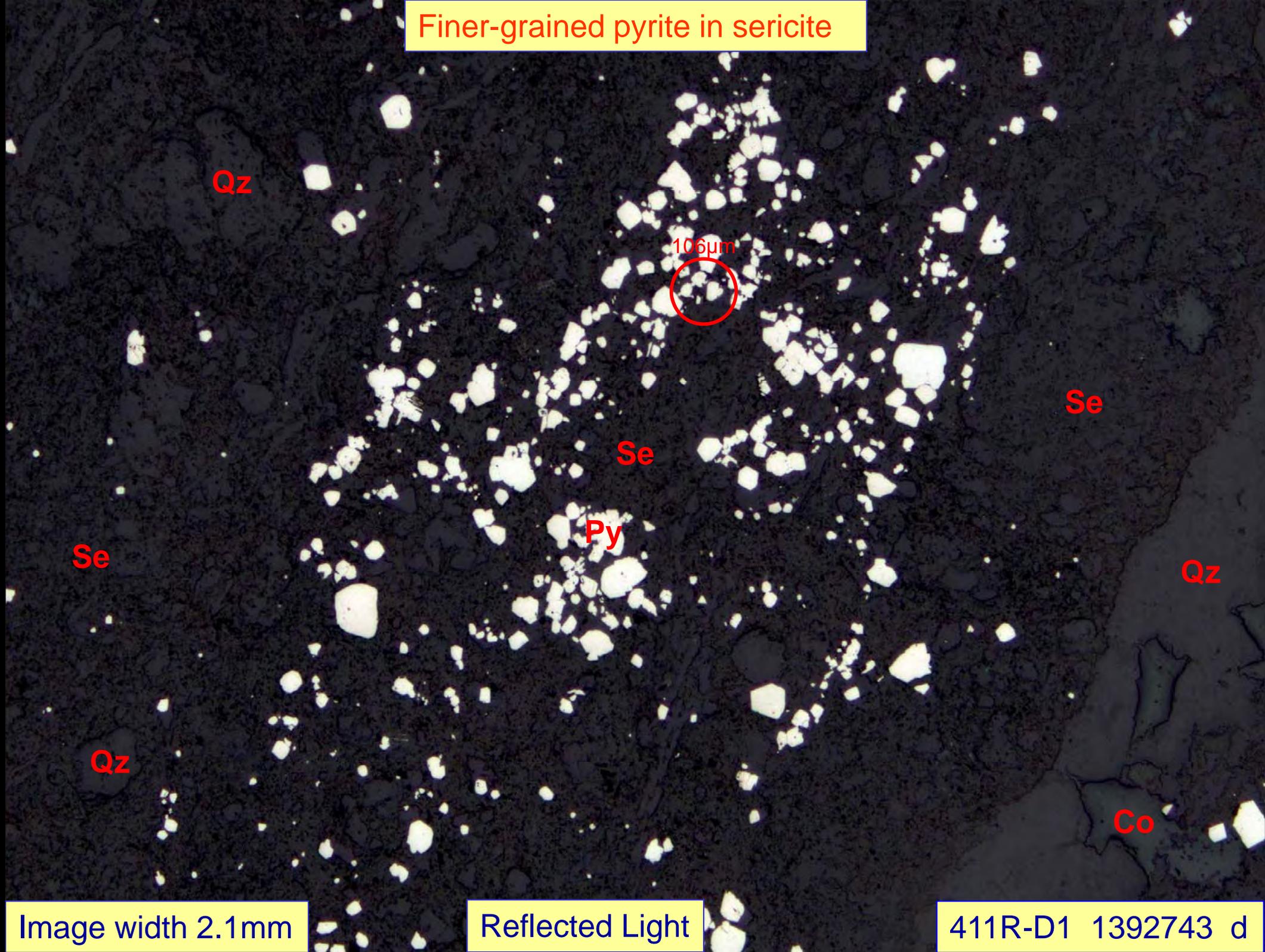
Qz

Co

Image width 2.1mm

Reflected Light

411R-D1 1392743 d



Sample Scan

Offcut Assay

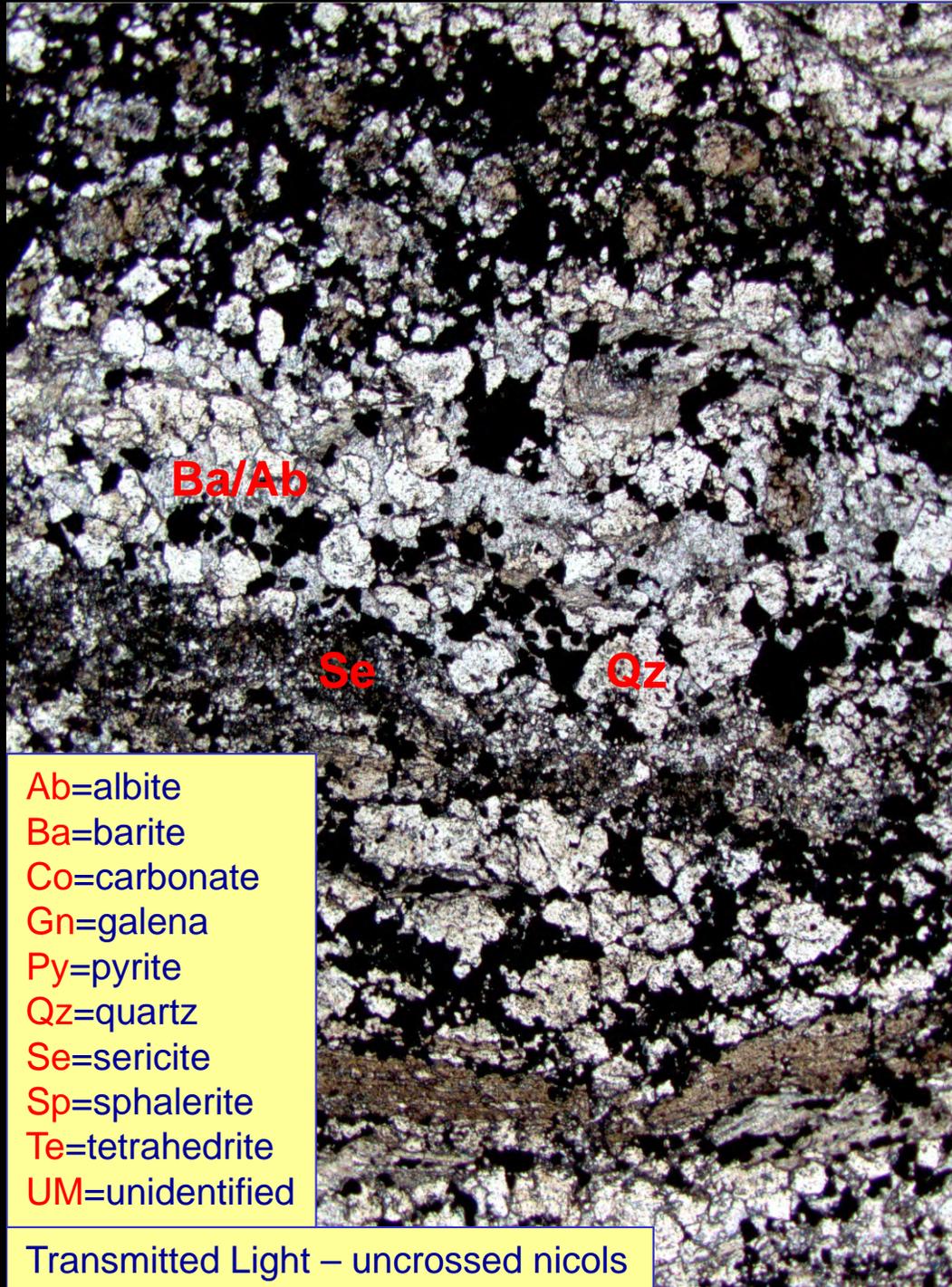
0.15%Cu, 3.07%Pb, 6.23%Zn, 13.95%Ba, <0.05%As, 5.14%Fe, 110pmAg



Image width ~40mm

DDH 411R-D1 1392744

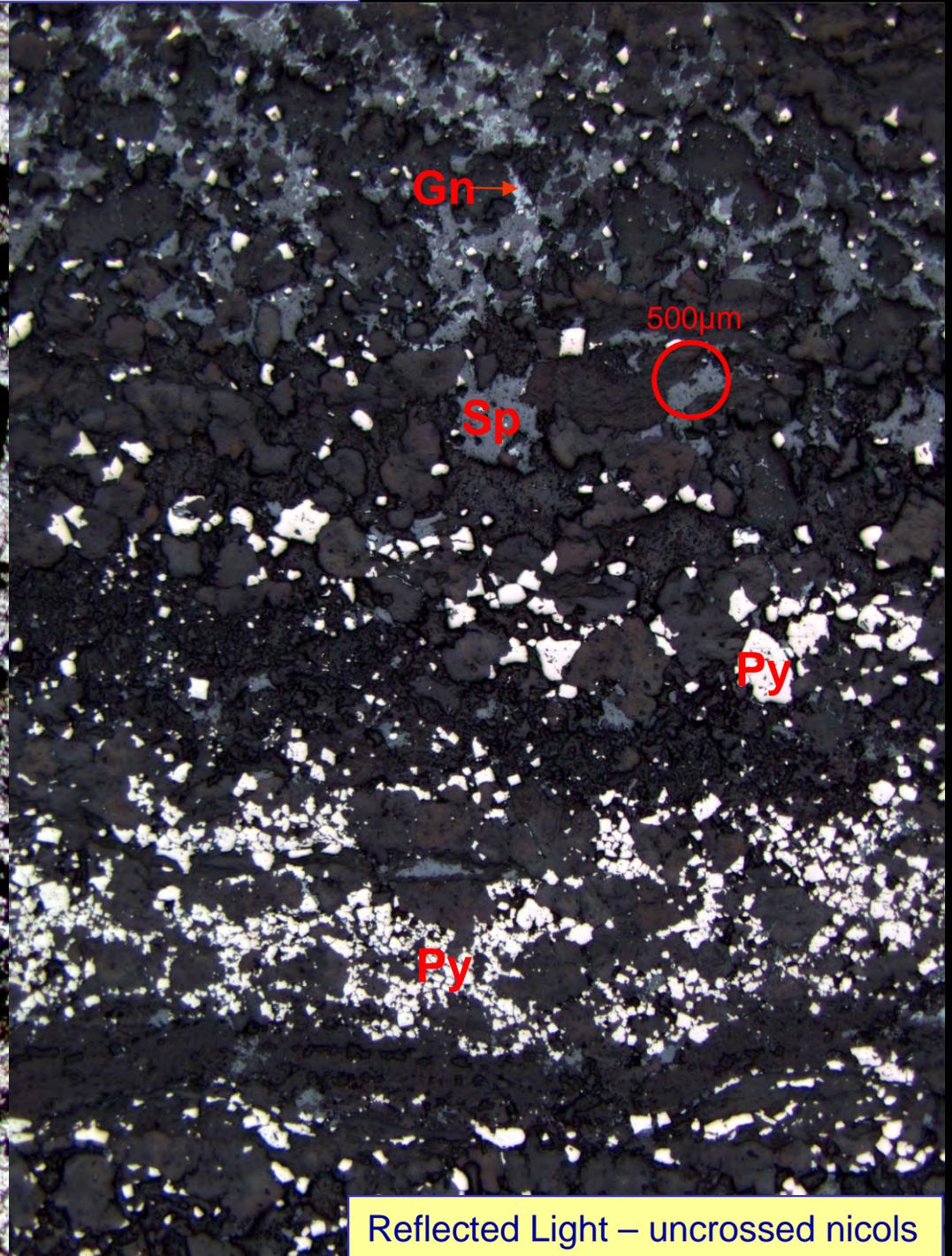
General low-magnification view



- Ab=albite
- Ba=barite
- Co=carbonate
- Gn=galena
- Py=pyrite
- Qz=quartz
- Se=sericite
- Sp=sphalerite
- Te=tetrahedrite
- UM=unidentified

Transmitted Light – uncrossed nicols

Image width 2x 6.2mm



Reflected Light – uncrossed nicols

DDH411R-D1 1392744 a/b

Irregular sphalerite-galena with quartz-barite-carbonate

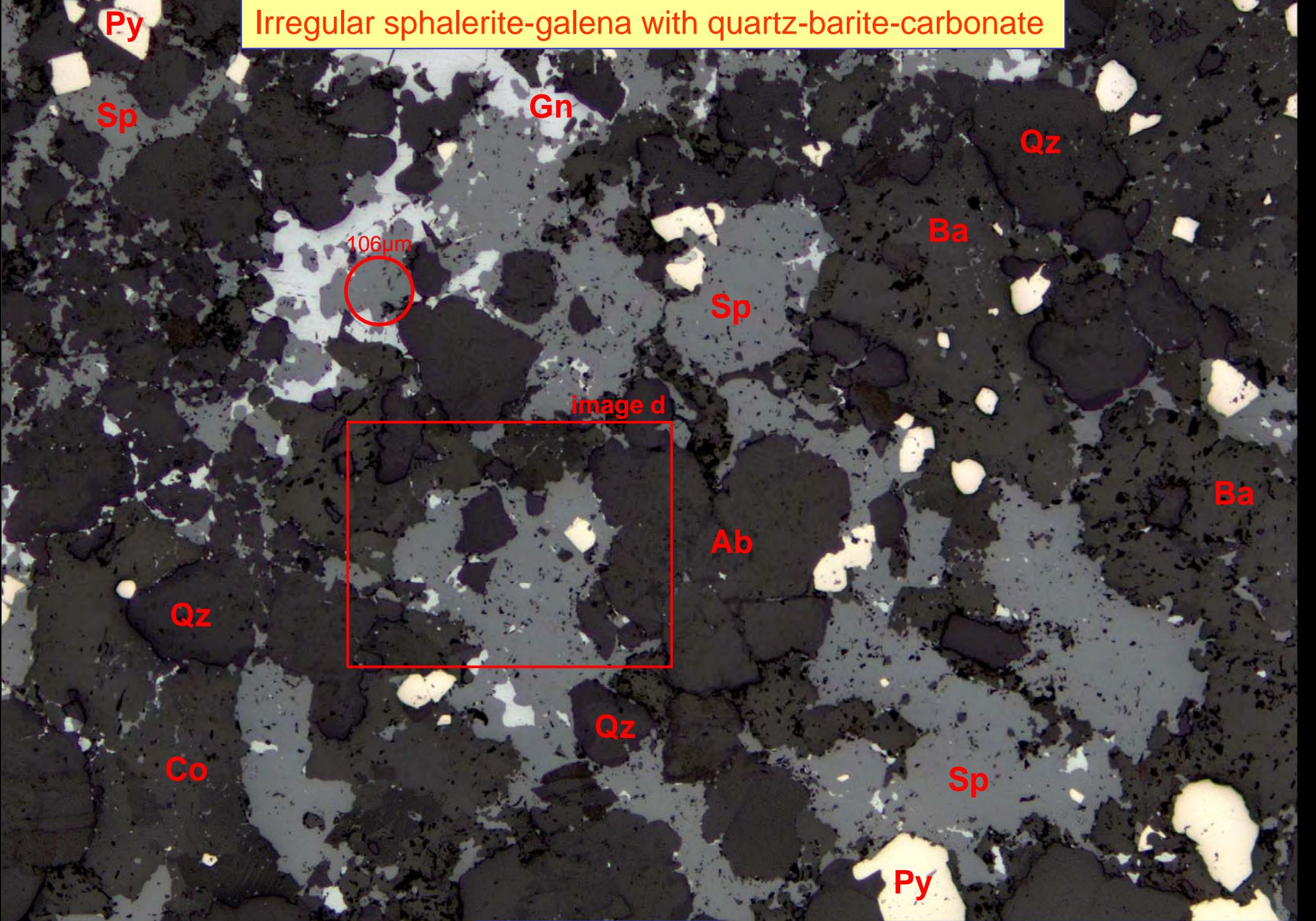


Image width 2.1mm

Reflected Light

DDH411R-D1 1392744 c

Detail from previous image

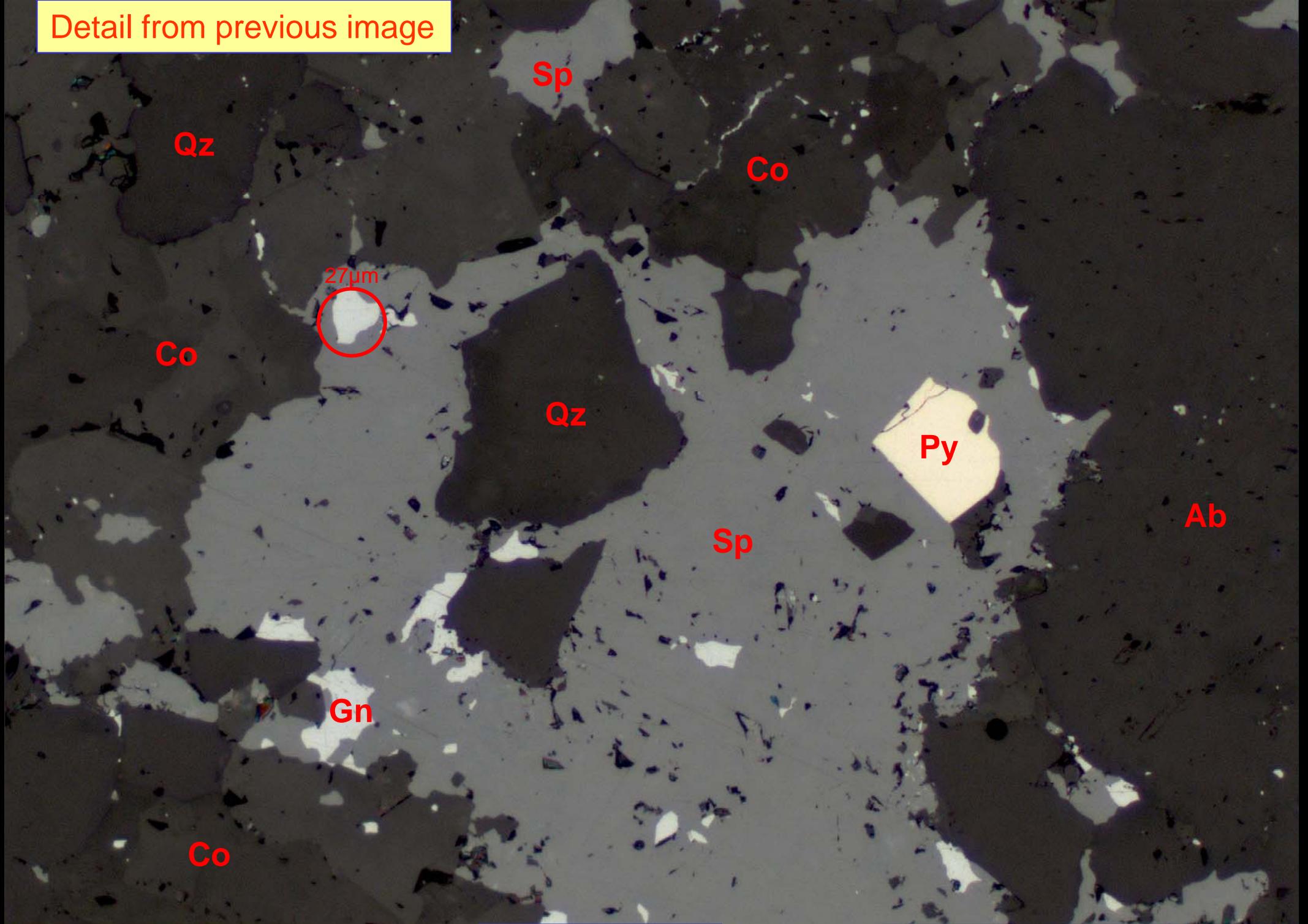


Image width 515µm

Reflected Light

DDH 411R-D1 1392744 d

Pyrite-sphalerite-galena-sulphosalts in quartz-barite

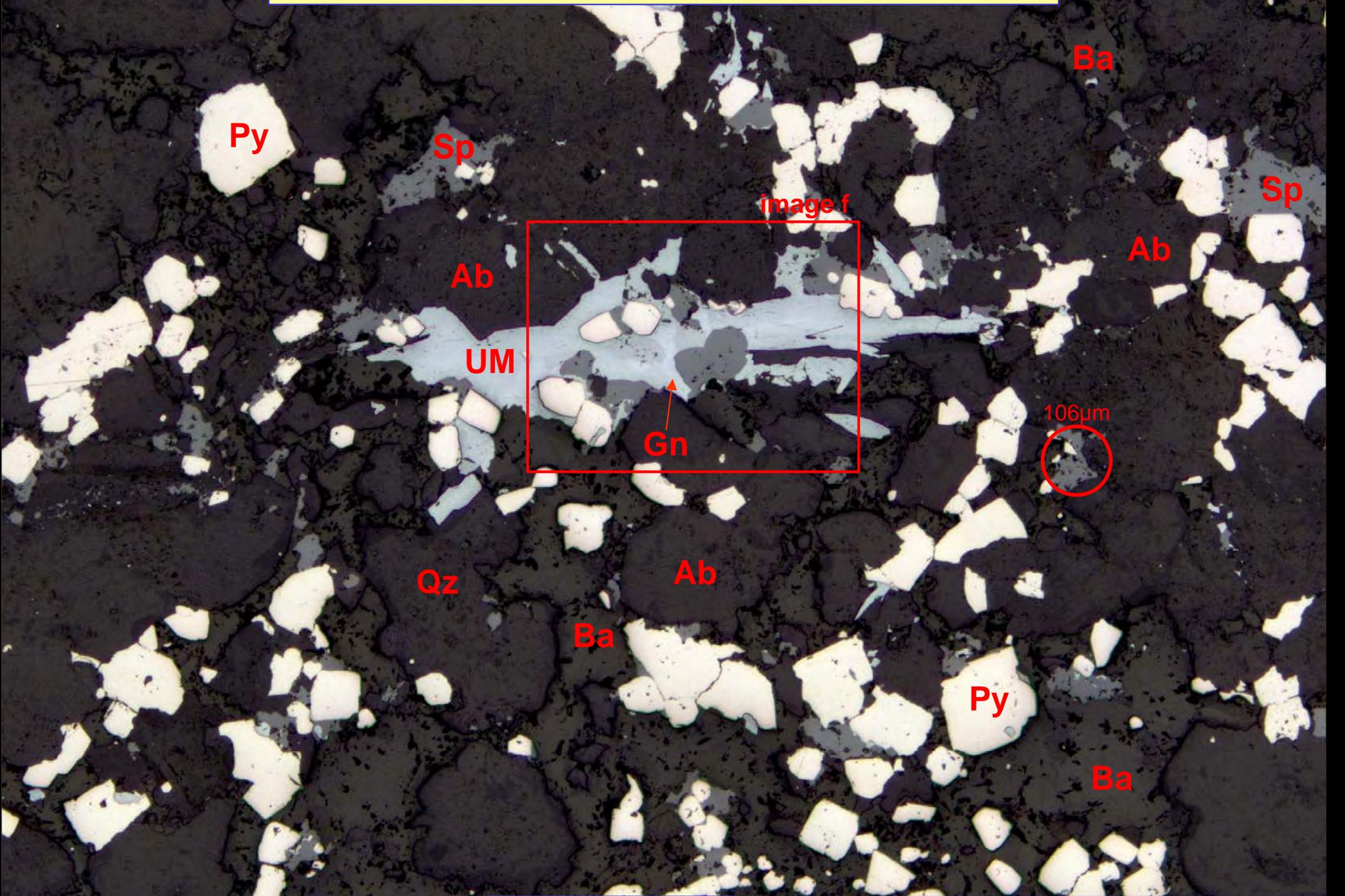


Image width 2.1mm

Reflected Light

DDH411R-D1 1392744 e

Detail from previous image: note two distinct sulphosalts

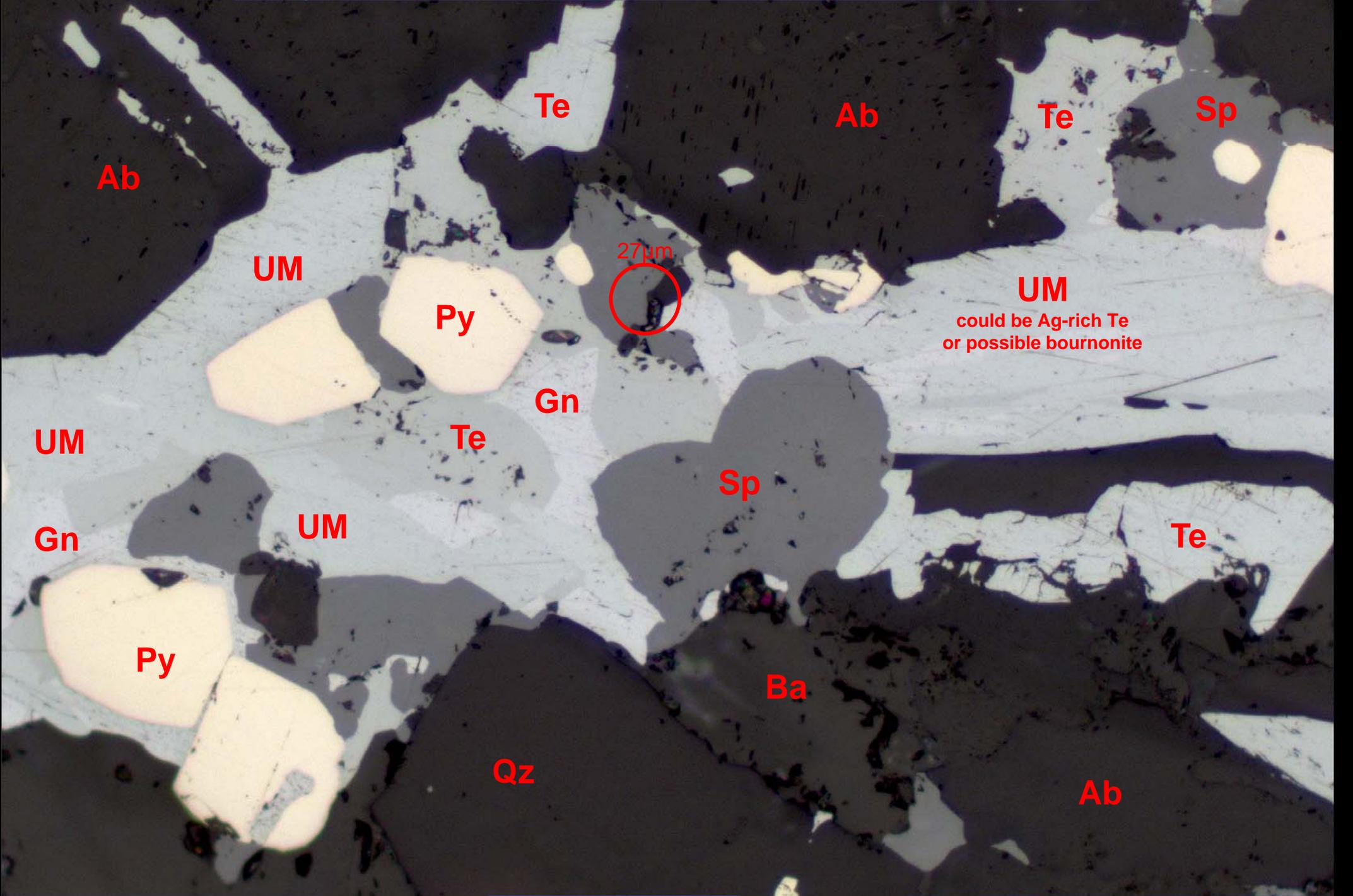


Image width 515µm

Reflected Light

DDH 411R-D1 1392744 f

Pyritic band with less barite

Se

Ba

Py

Ab

106µm

image h

Gn

Py

Qz

Sp

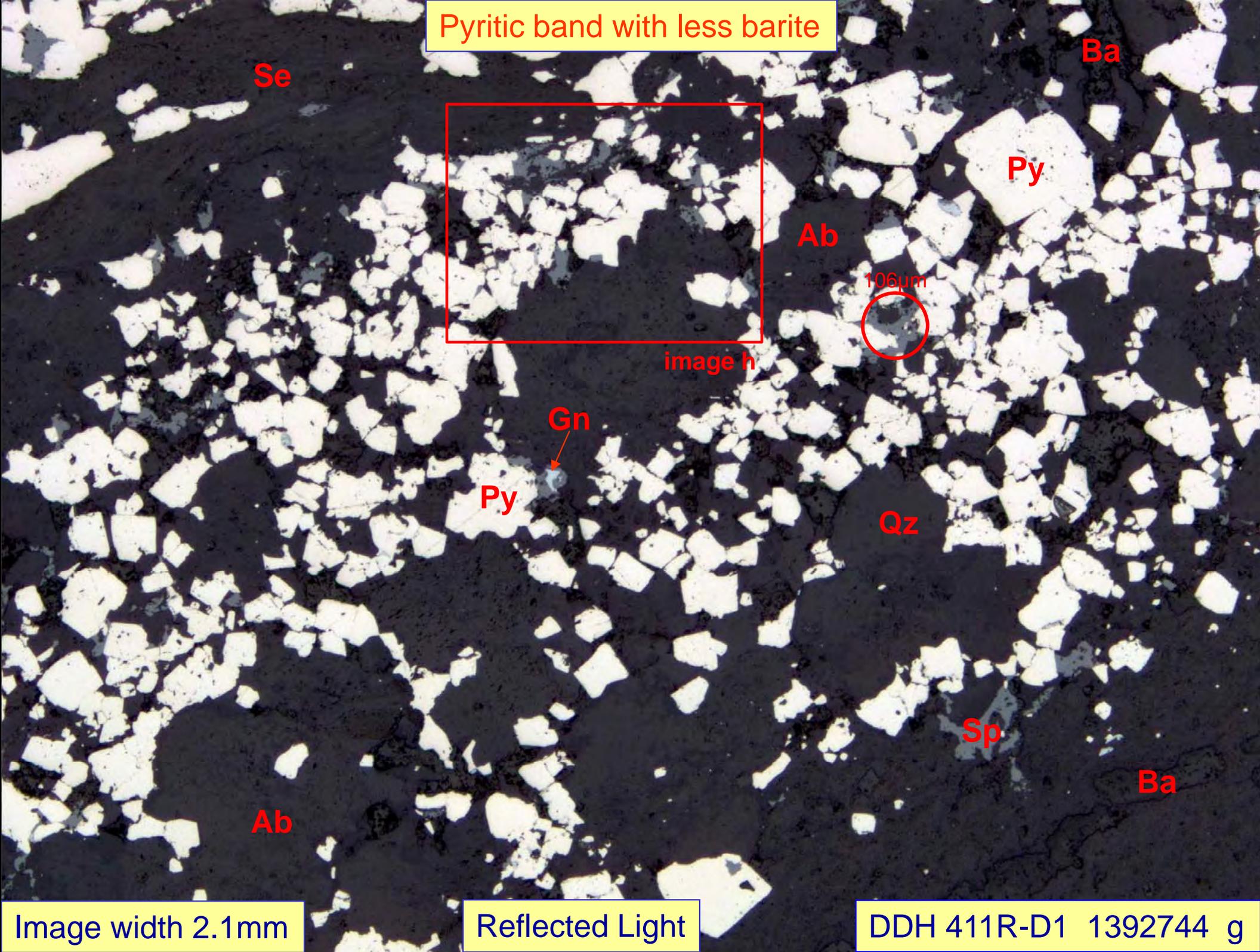
Ba

Ab

Image width 2.1mm

Reflected Light

DDH411R-D1 1392744 g



Detail from previous image

Se

Qz

Sp

Se

27µm

Py

Sp

Gn

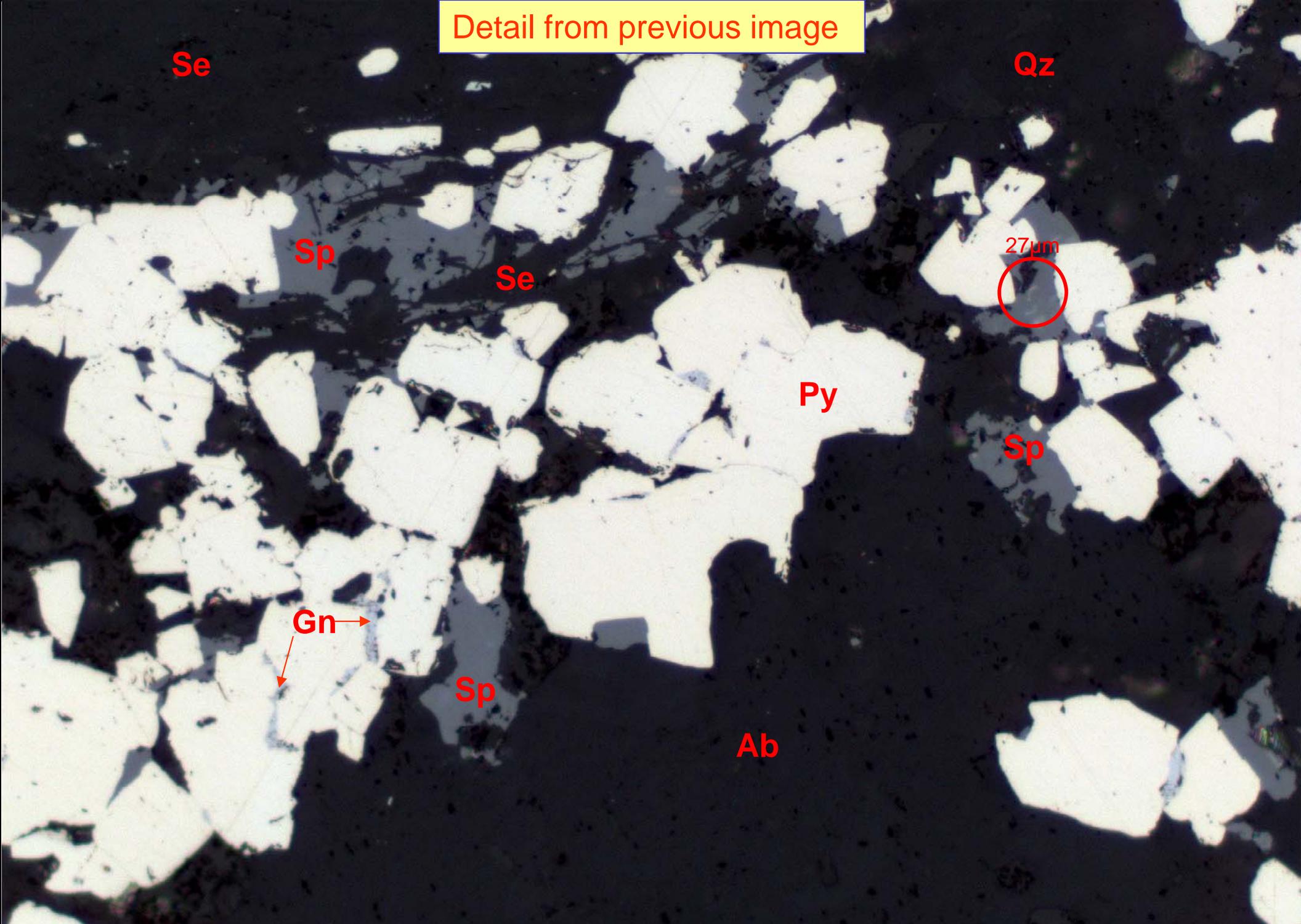
Sp

Ab

Image width 515µm

Reflected Light

DDH 411R-D1 1392744 h



Tetrahedrite, interstitial to quartz-barite-albite

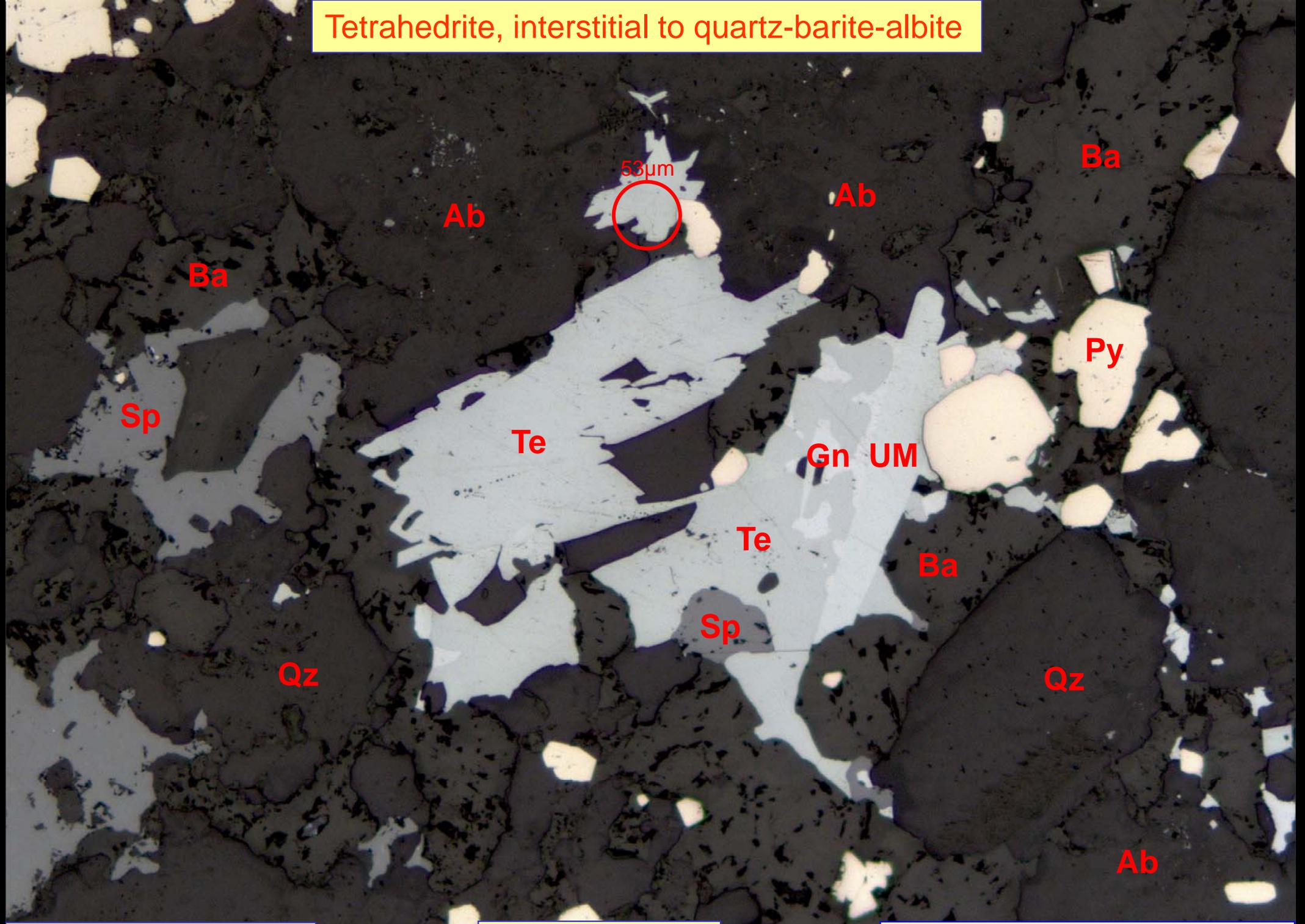


Image width 1.0mm

Reflected Light

DDH 411R-D1 1392744 i

Irregular interstitial sphalerite-galena

Qz

Gn

Co

53µm

Ba

Ba

Sp

Py

Sp

Qz

Sp

Co

Image width 1.0mm

Reflected Light

DDH 411R-D1 1392744 j

Coarse tetrahedrite

Sp

Sp

Te

Gn

53µm

Gn

Te

UM

Te

Qz

Py

Ba

Sp

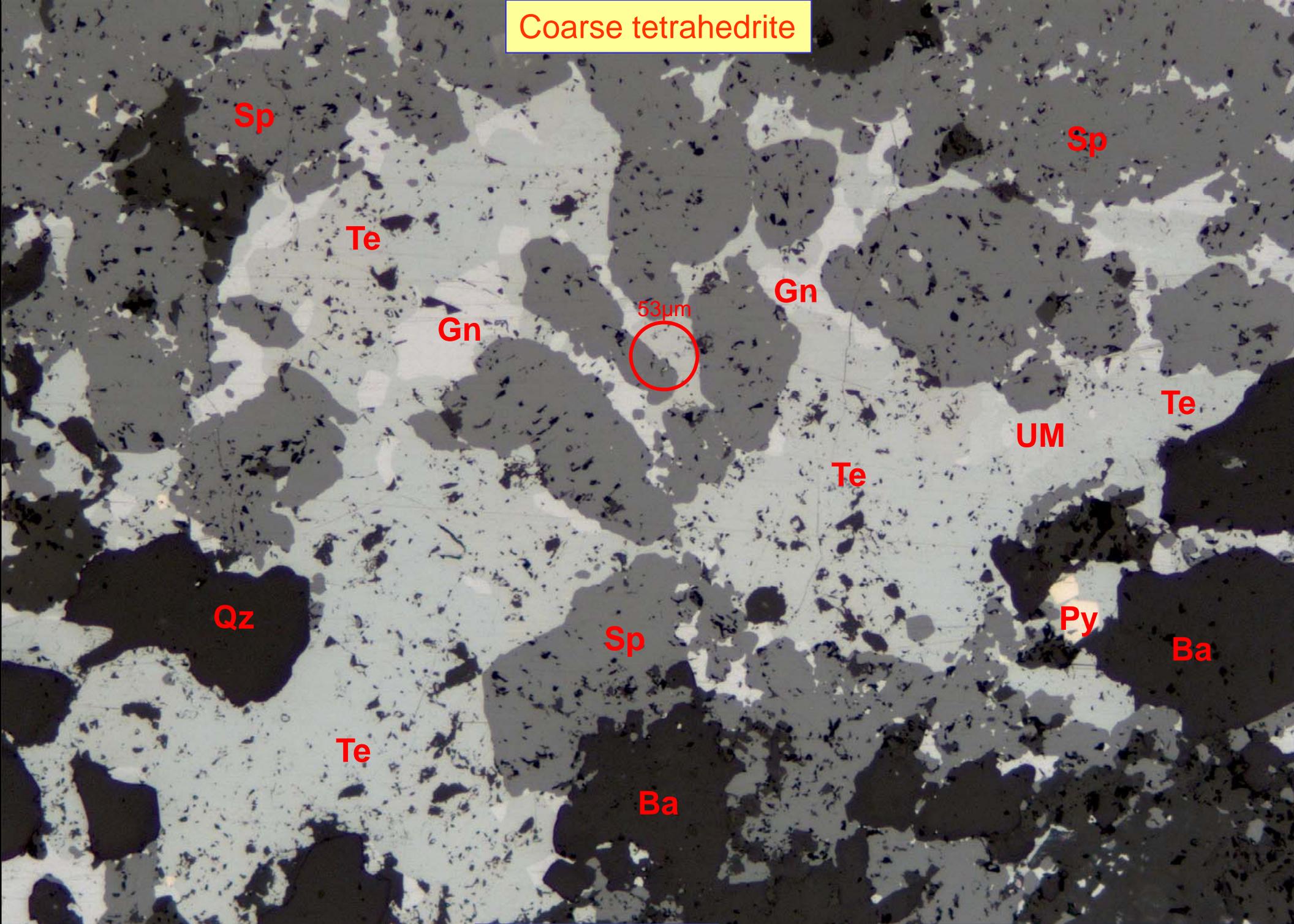
Te

Ba

Image width 1.0mm

Reflected Light

DDH 411R-D1 1392744 k



Interstitial sphalerite-galena

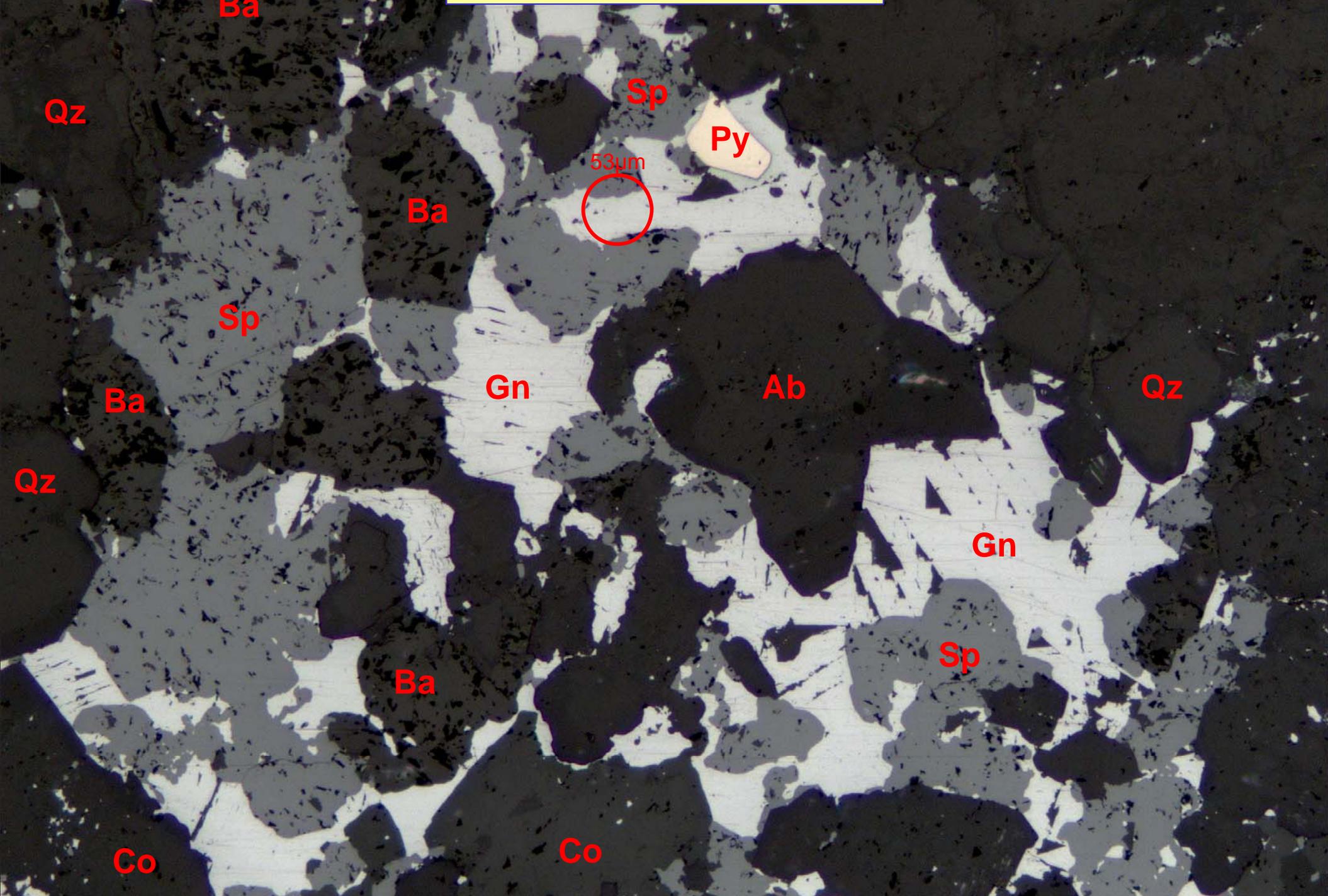


Image width 1.0mm

Reflected Light

DDH 411R-D1 1392744 I

Sample Scan

Offcut Assay

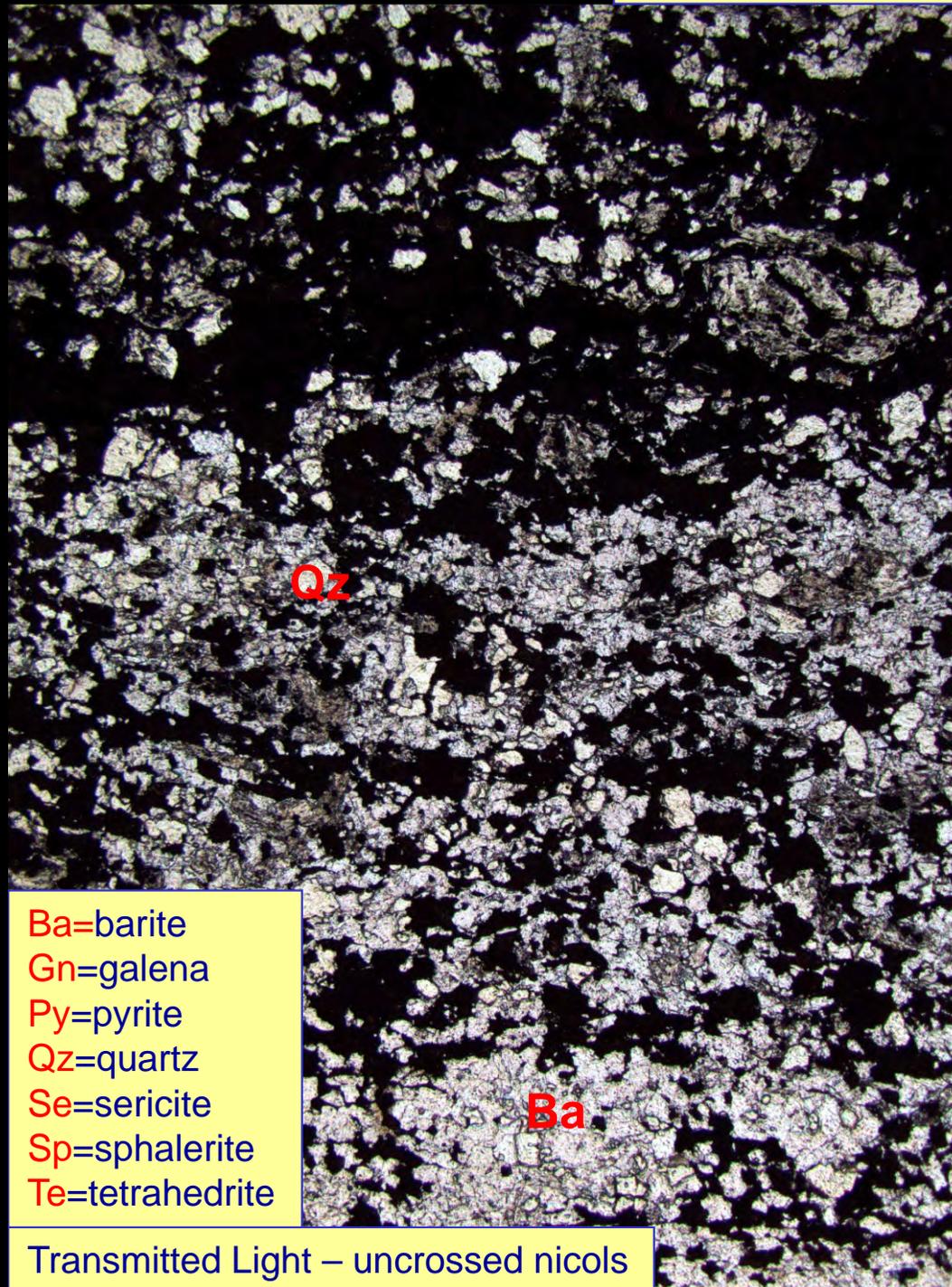
0.32%Cu, 7.16%Pb, 12.05%Zn, 33.20%Ba, <0.05%As, 3.20%Fe, 790ppmAg



Image width ~45mm

DDH 411R-D1 1392745

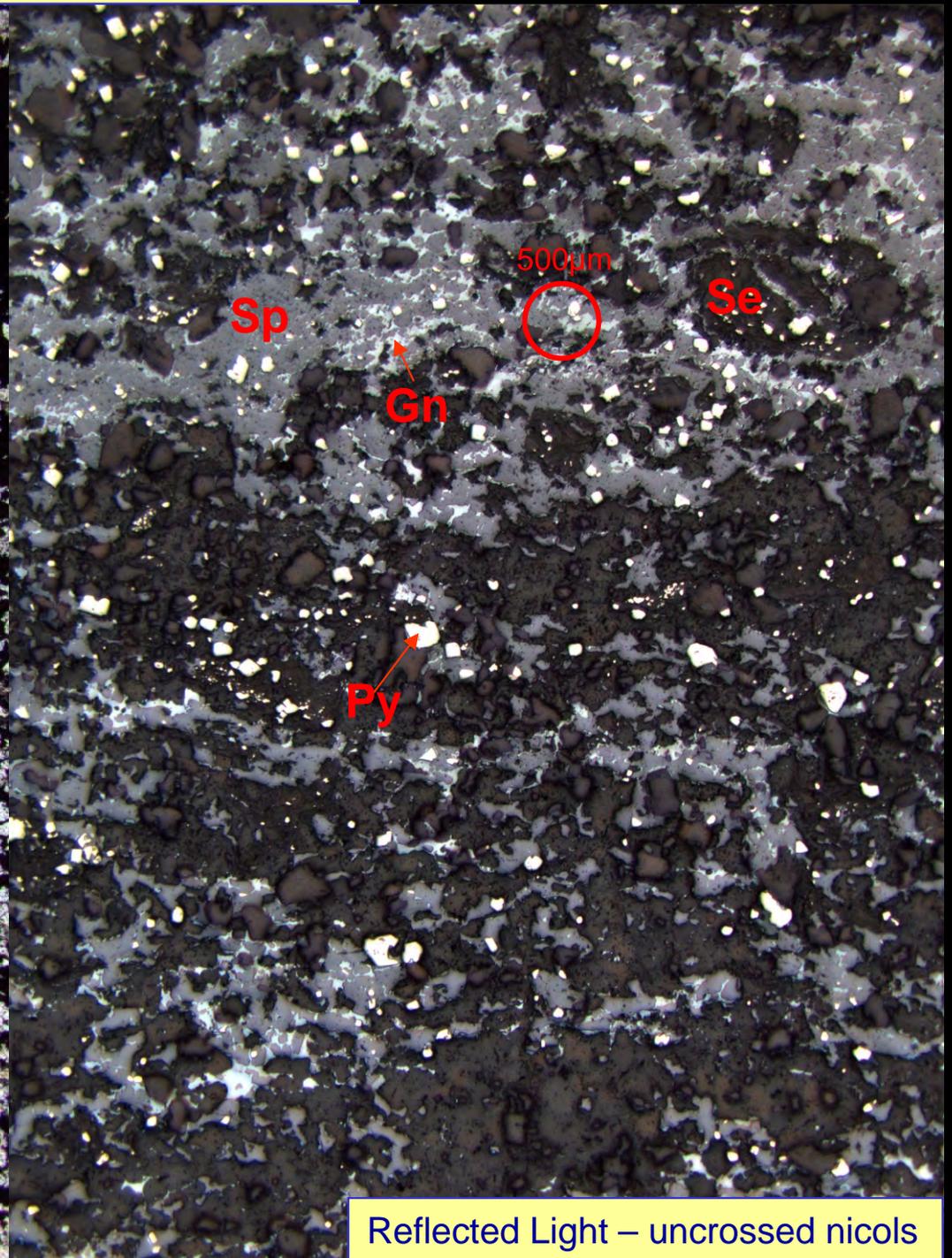
General low-magnification view



Ba=barite
Gn=galena
Py=pyrite
Qz=quartz
Se=sericite
Sp=sphalerite
Te=tetrahedrite

Transmitted Light – uncrossed nicols

Image width 2x 6.2mm



Reflected Light – uncrossed nicols

DDH411R-D1 1392745 a/b

Strongly annealed sphalerite-tetrahedrite-galena band

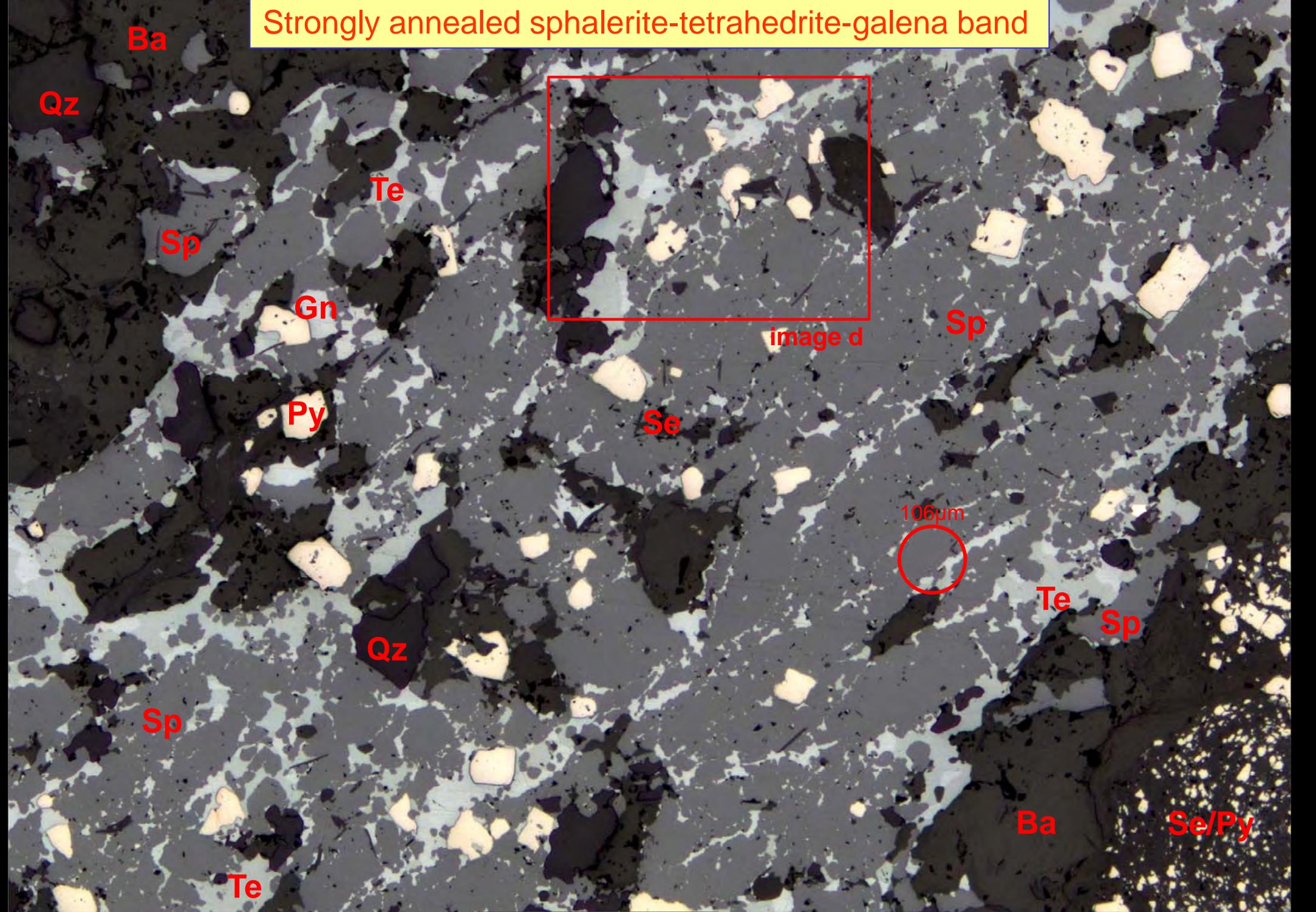


Image width 2.1mm

Reflected Light

DDH411R-D1 1392745 c

Detail from previous image

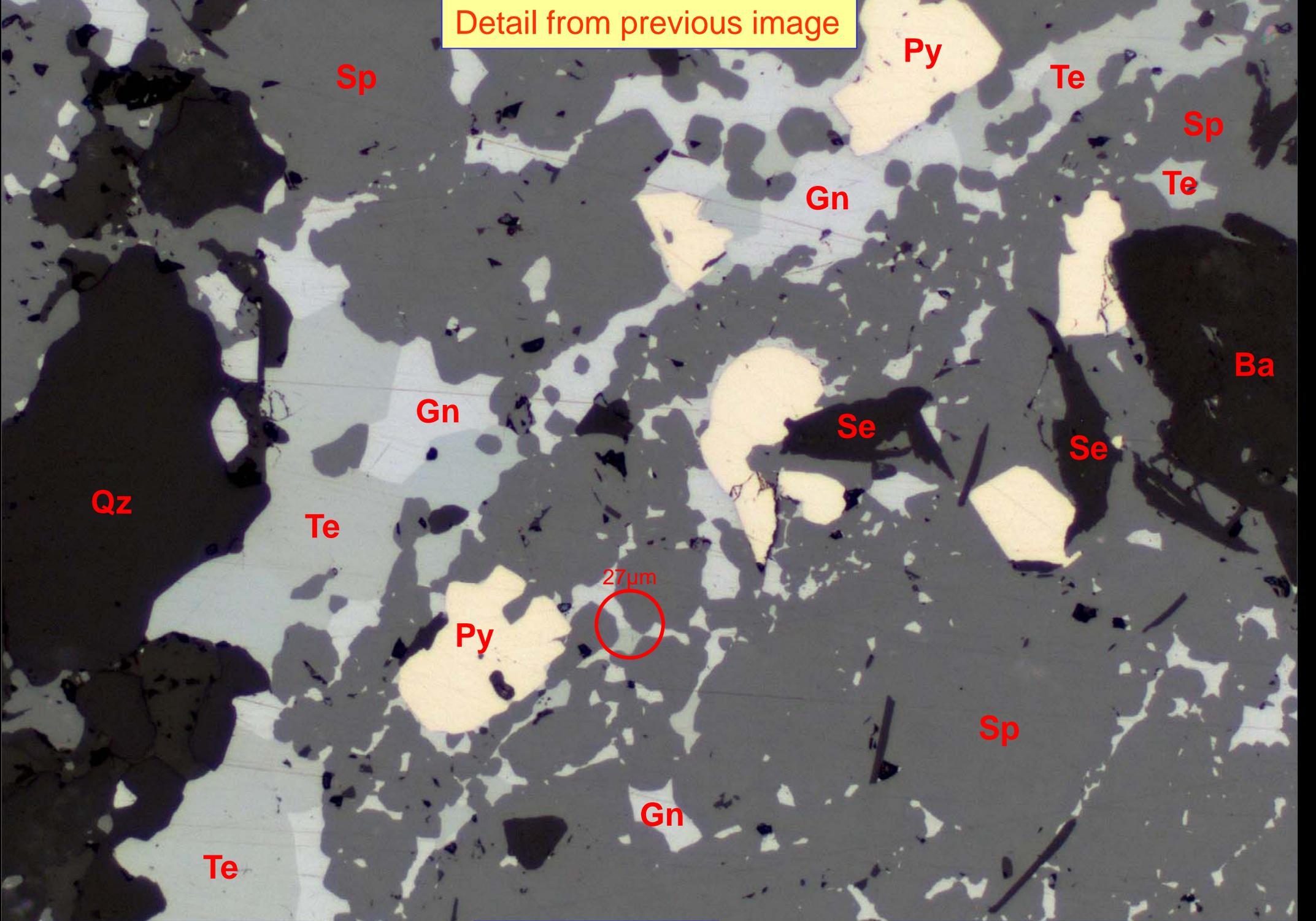


Image width 515µm

Reflected Light

DDH 411R-D1 1392745 d

Weakly layered barite/sphalerite-galena-pyrite

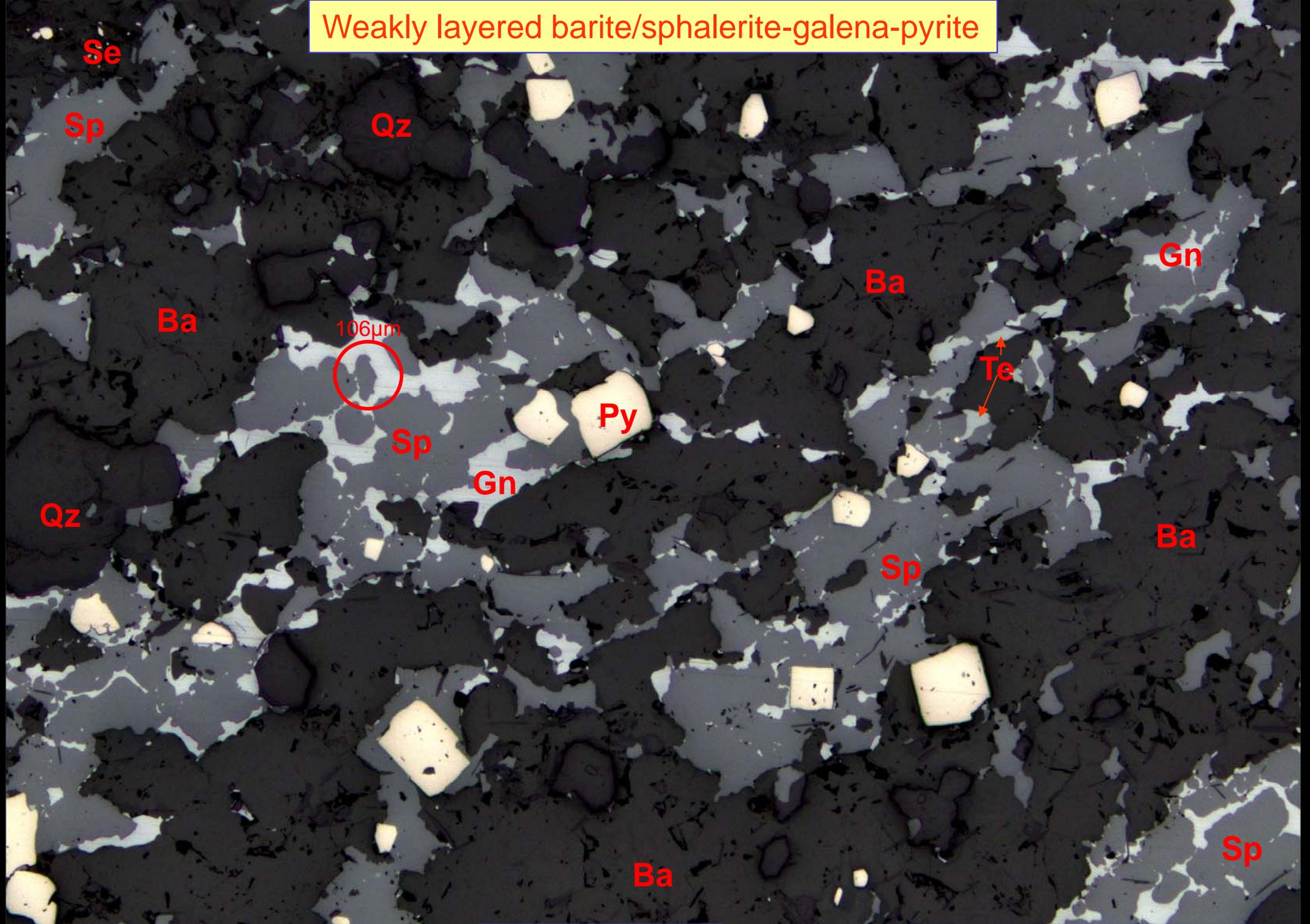


Image width 2.1mm

Reflected Light

DDH411R-D1 1392745 e

Very weakly layered barite-sphalerite/galena/tetrahedrite

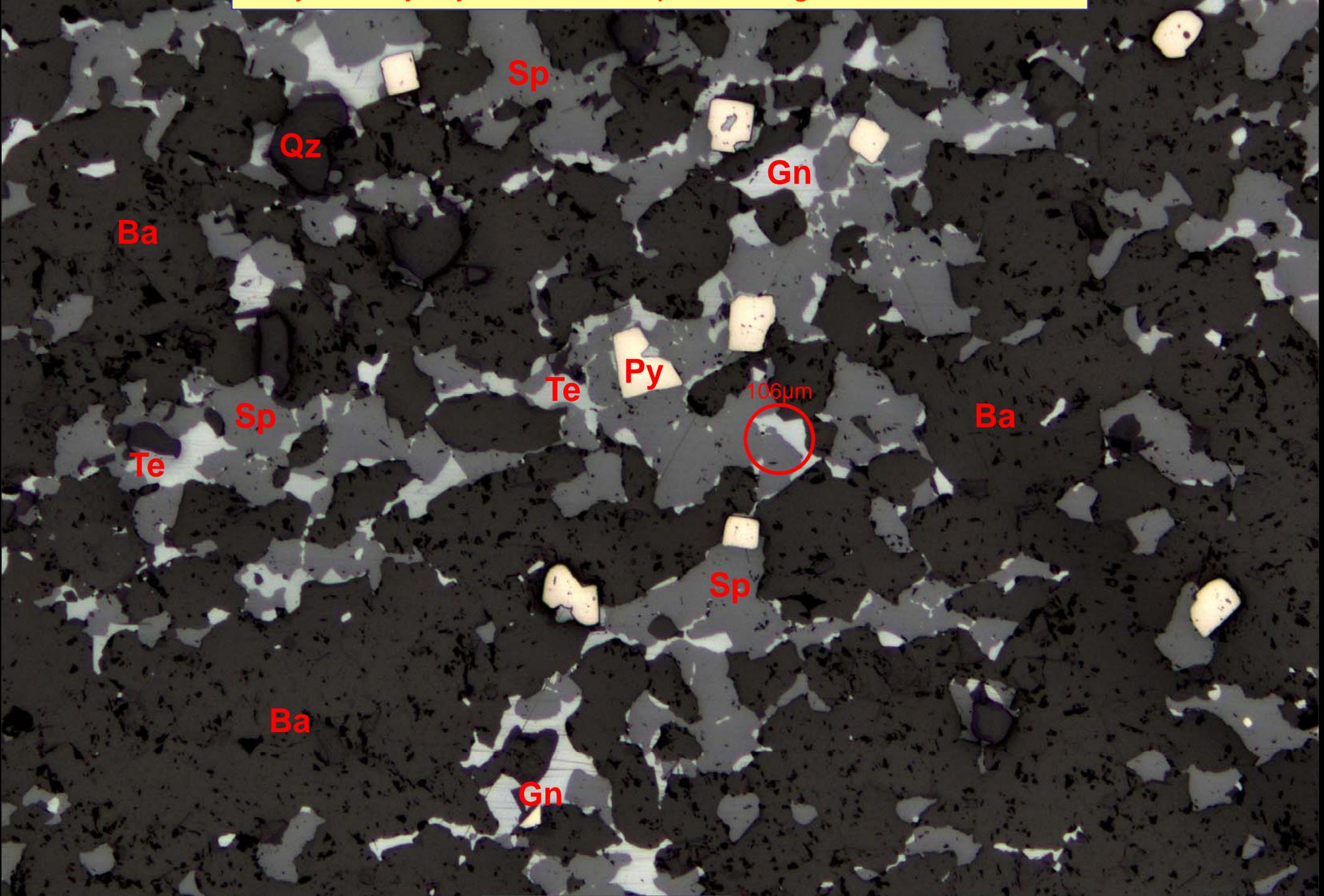


Image width 2.1mm

Reflected Light

DDH411R-D1 1392745 f

Dominant barite with scattered sphalerite/galena/tetrahedrite

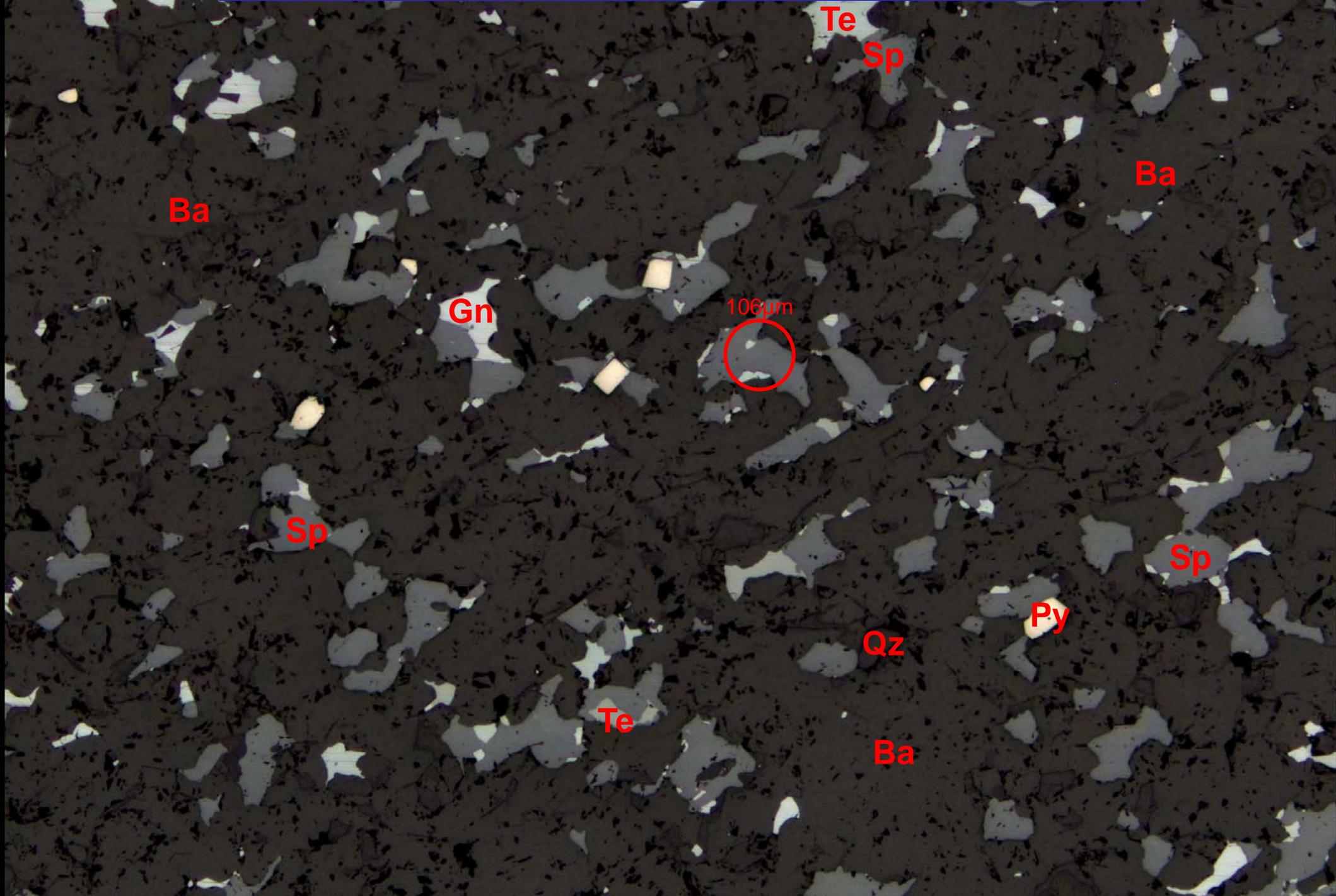


Image width 2.1mm

Reflected Light

DDH 411R-D1 1392745 g

Band of annealed sphalerite/galena/tetrahedrite

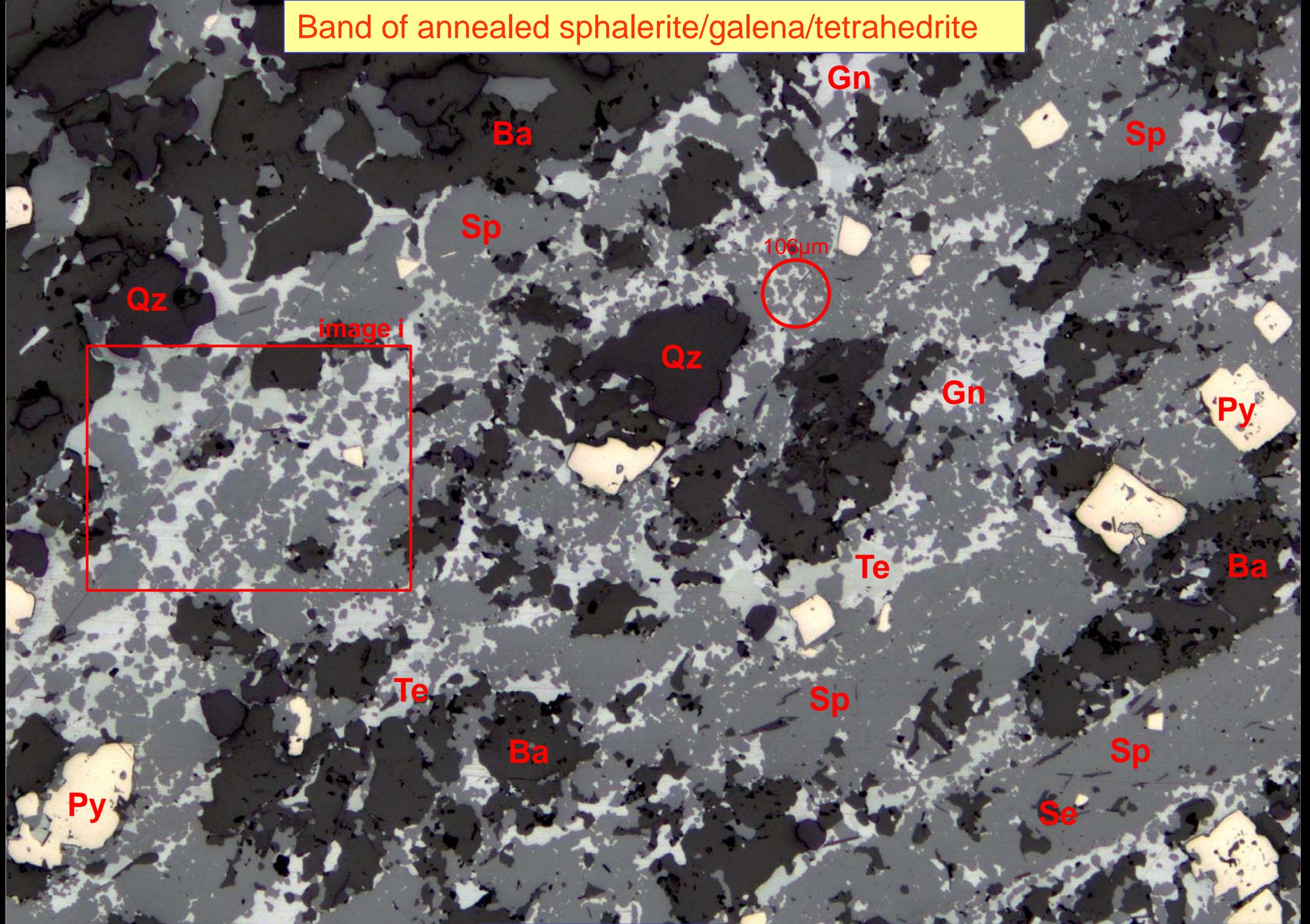


Image width 2.1mm

Reflected Light

DDH411R-D1 1392745 h

Detail from previous image – note lack of fabric

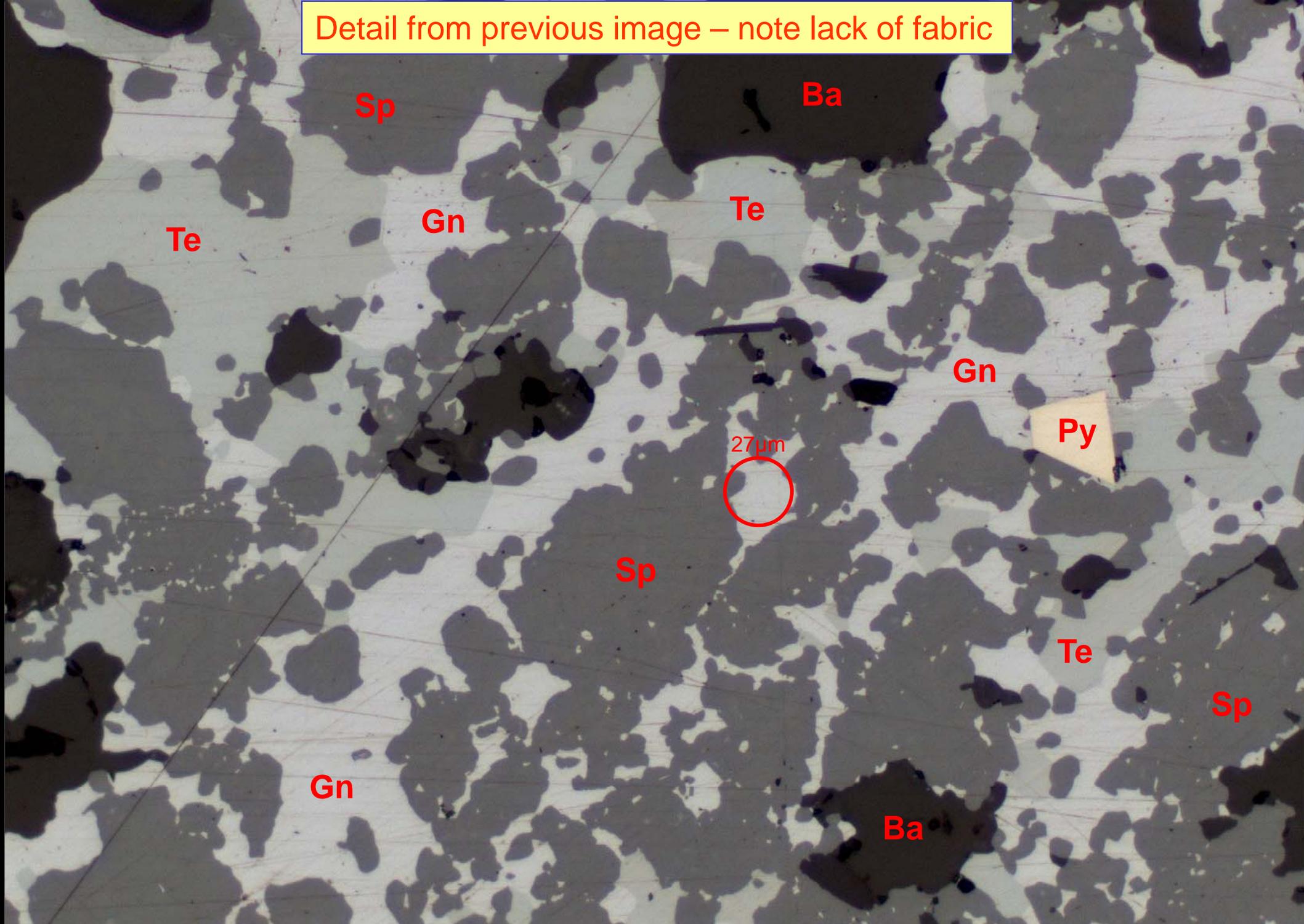


Image width 515µm

Reflected Light

DDH 411R-D1 1392745 i

Clots of irregular sphalerite in sericite-pyrite

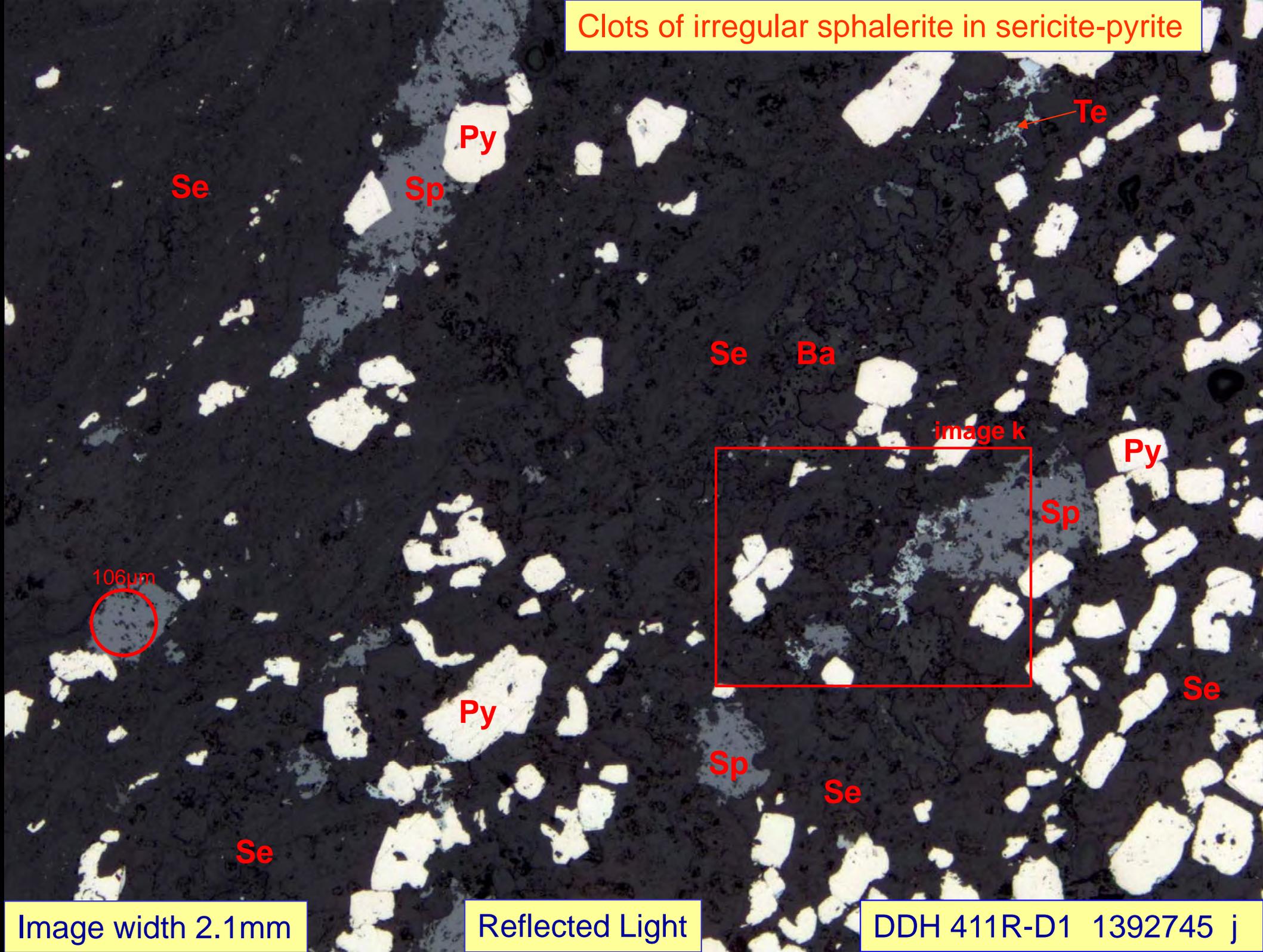


Image width 2.1mm

Reflected Light

DDH411R-D1 1392745 j

Detail from previous image

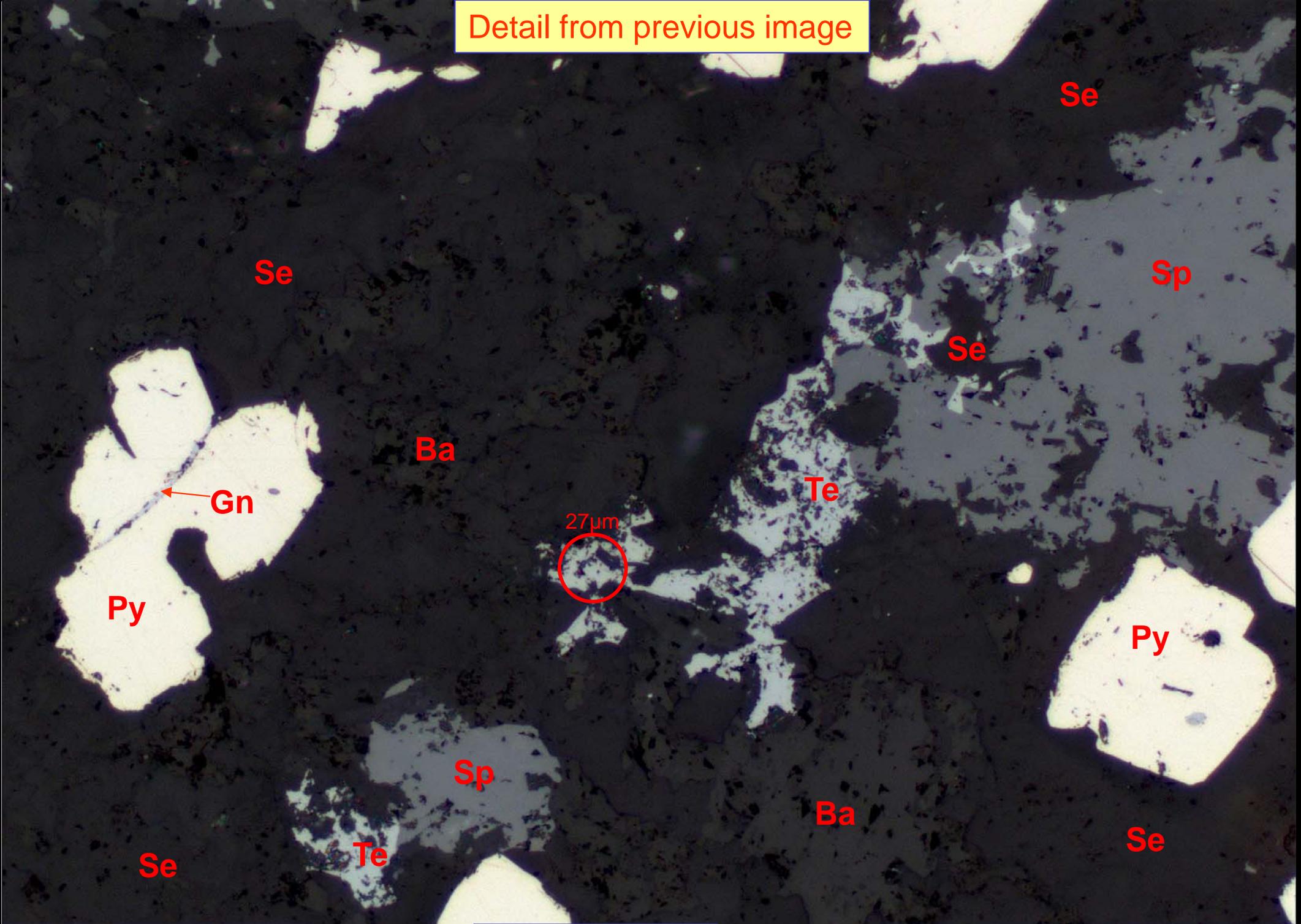


Image width 515µm

Reflected Light

DDH 411R-D1 1392745 k

Galena-tetrahedrite interstitial to pyrite

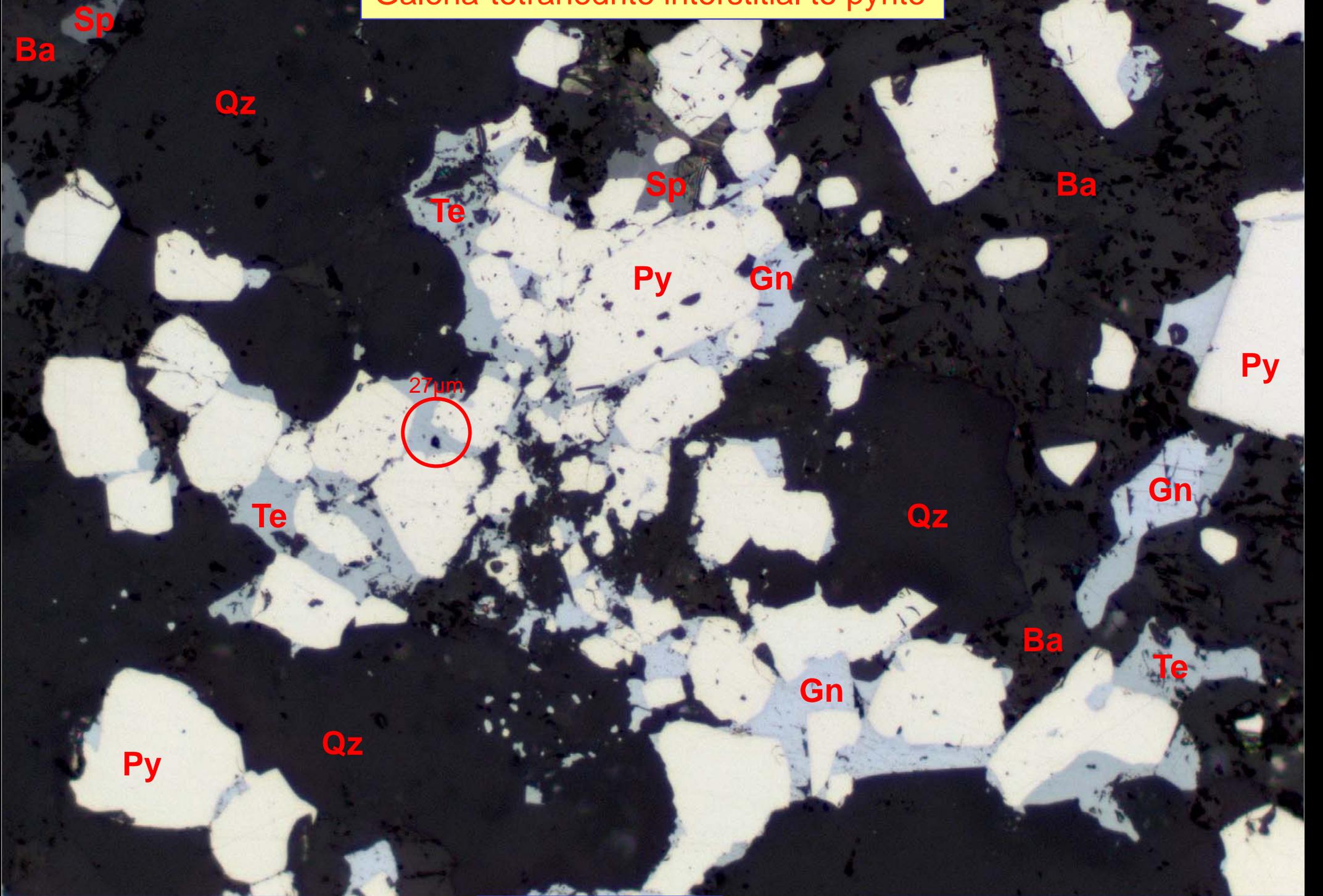


Image width 515µm

Reflected Light

DDH 411R-D1 1392745 I

Sample Scan

Offcut Assay

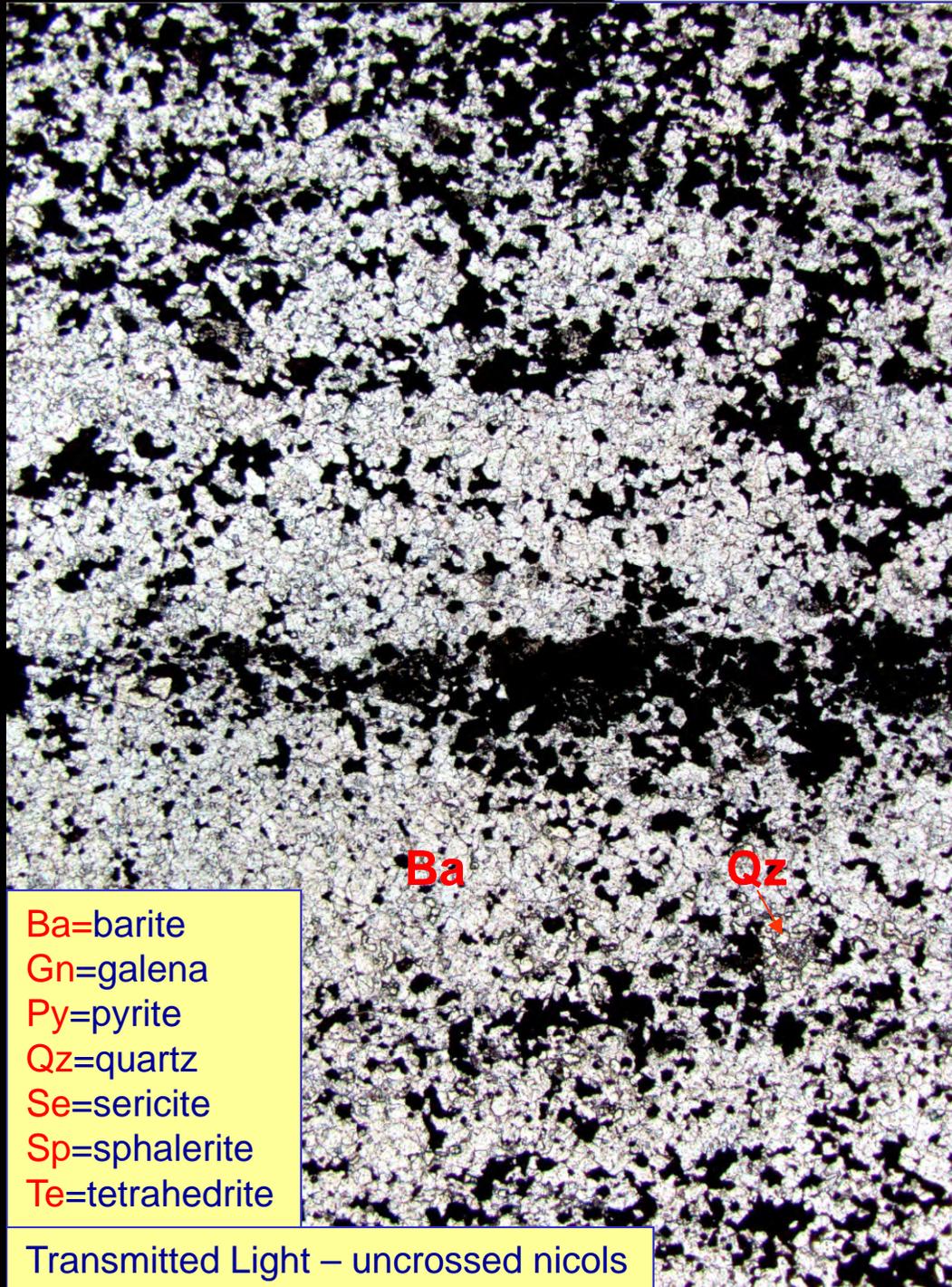
0.24%Cu, 5.95%Pb, 8.59%Zn, 39.60%Ba, <0.05%As, 3.37%Fe, 341ppmAg



Image width ~45mm

DDH 411R-D1 1392746

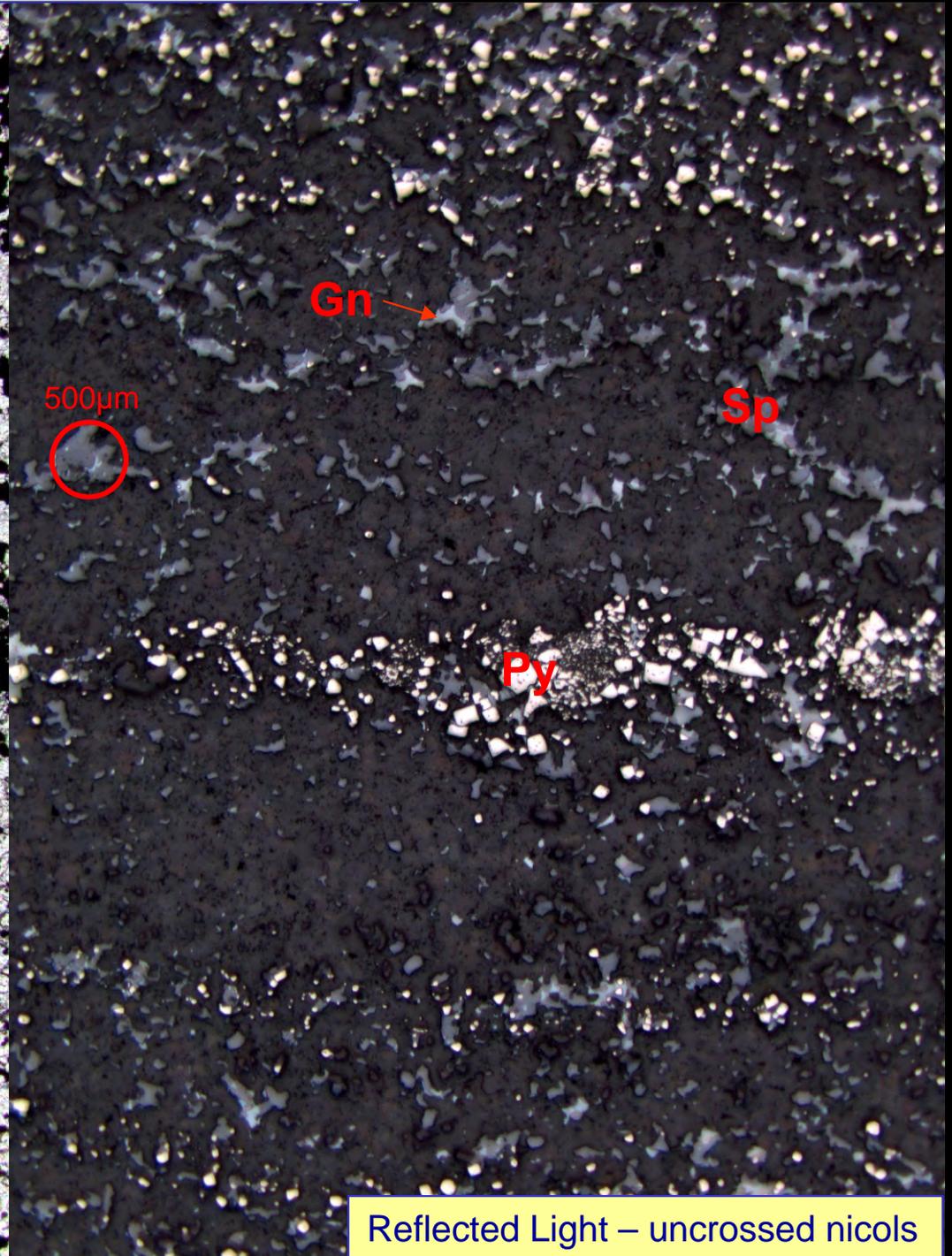
General low-magnification view



- Ba=barite
- Gn=galena
- Py=pyrite
- Qz=quartz
- Se=sericite
- Sp=sphalerite
- Te=tetrahedrite

Transmitted Light - uncrossed nicols

Image width 2x 6.2mm



Reflected Light - uncrossed nicols

DDH411R-D1 1392746 a/b

Sphalerite-pyrite-galena-tetrahedrite interstitial to barite

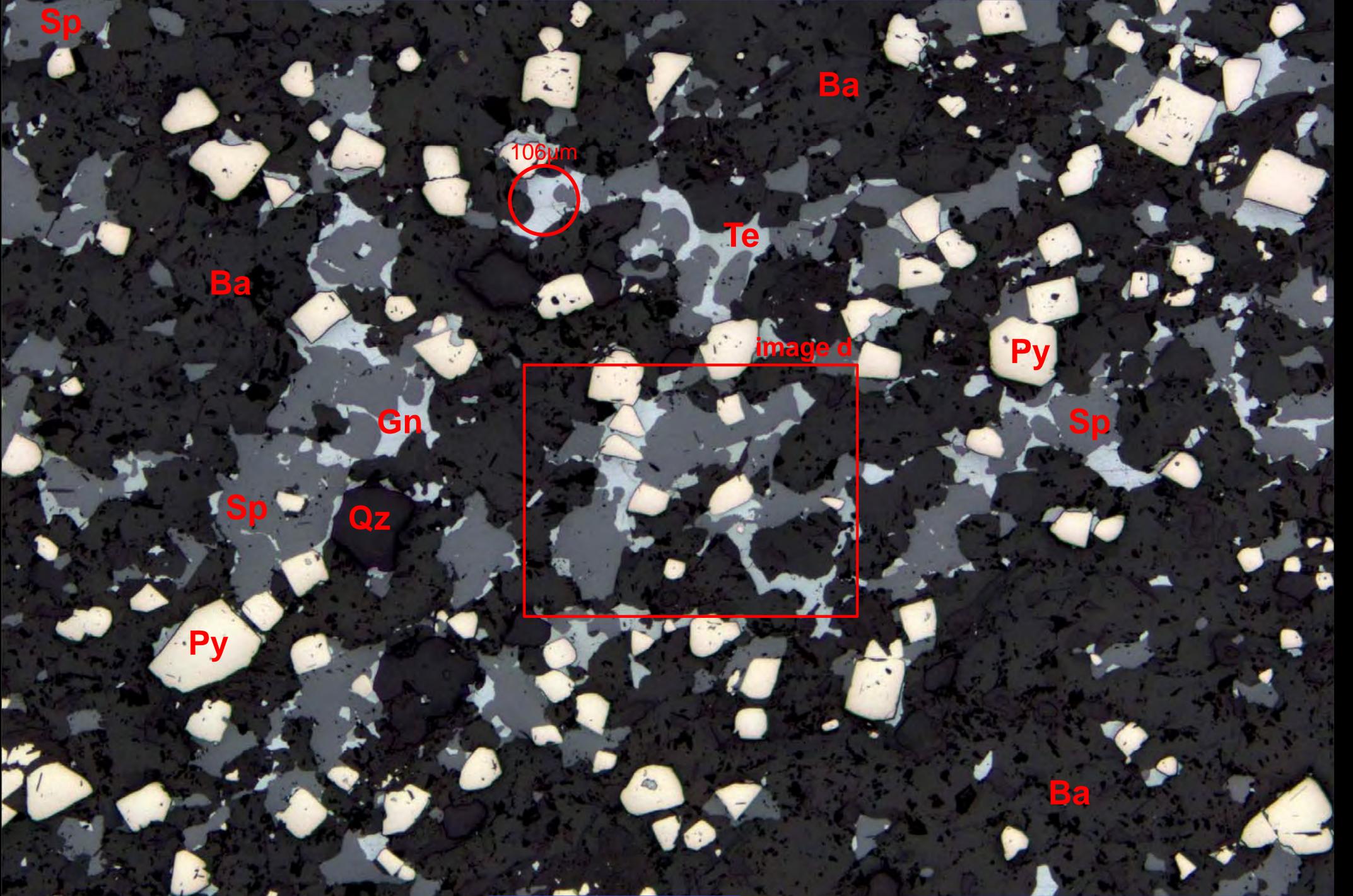


Image width 2.1mm

Reflected Light

DDH411R-D1 1392746 c

Detail from previous image

Ba

Py

Te

Sp

Ba

27µm

Se

Gn

Py

Sp

Sp

Te

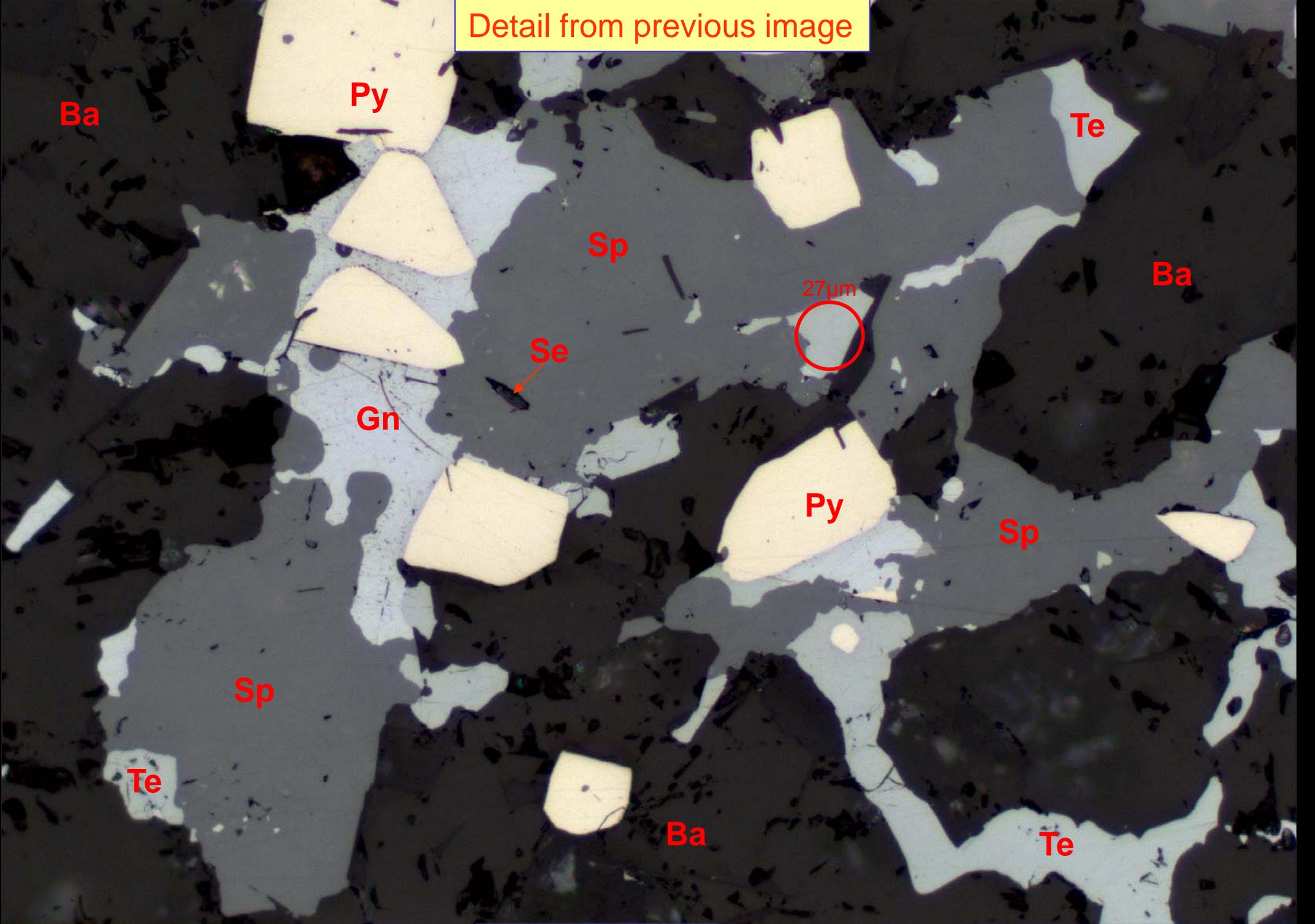
Ba

Te

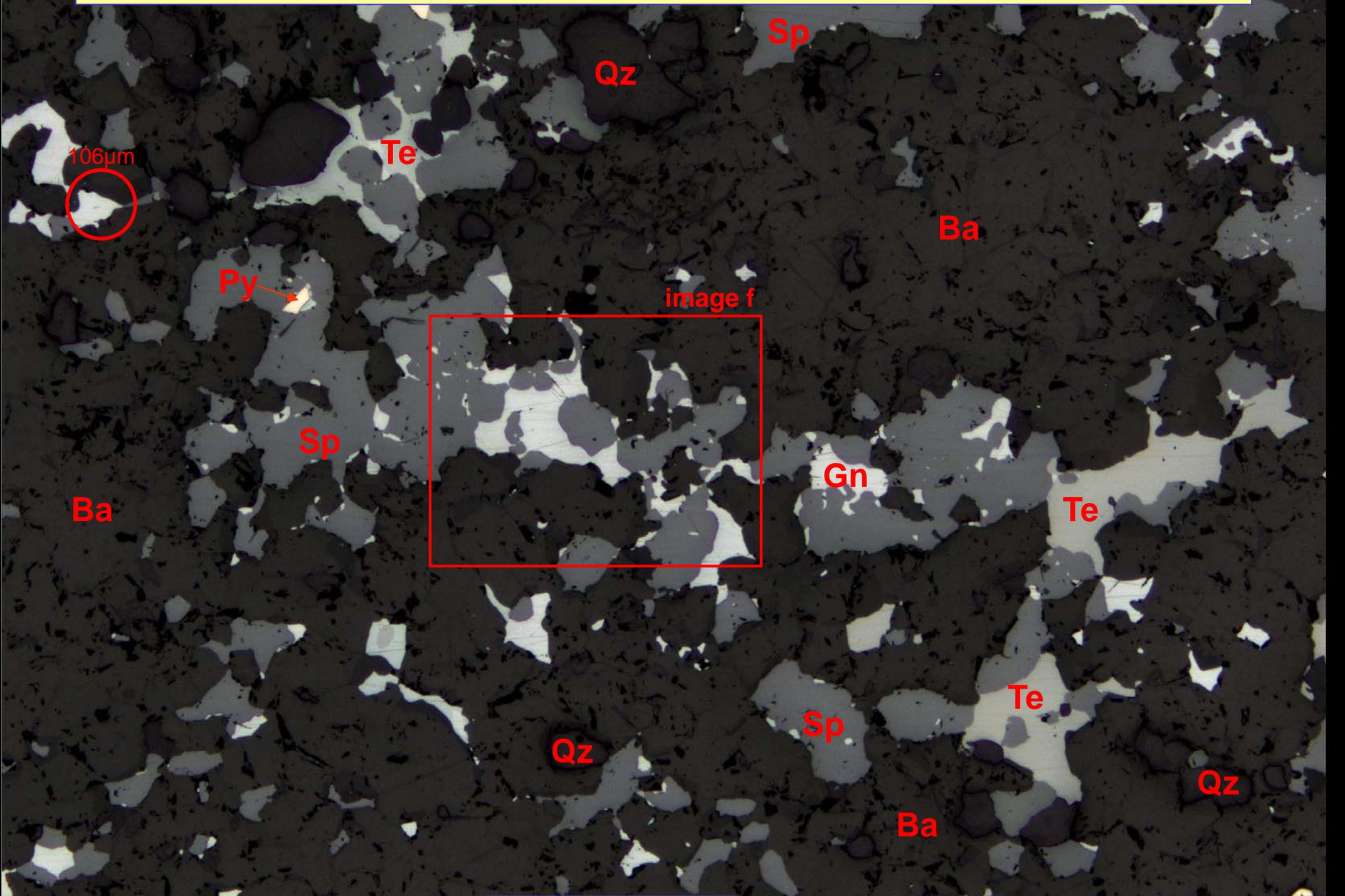
Image width 515µm

Reflected Light

DDH 411R-D1 1392746 d



Sphalerite-tetrahedrite-galena interstitial to dominant barite, note lack of pyrite



106µm

Py

image f

Image width 2.1mm

Reflected Light

DDH411R-D1 1392746 e

Detail from previous image

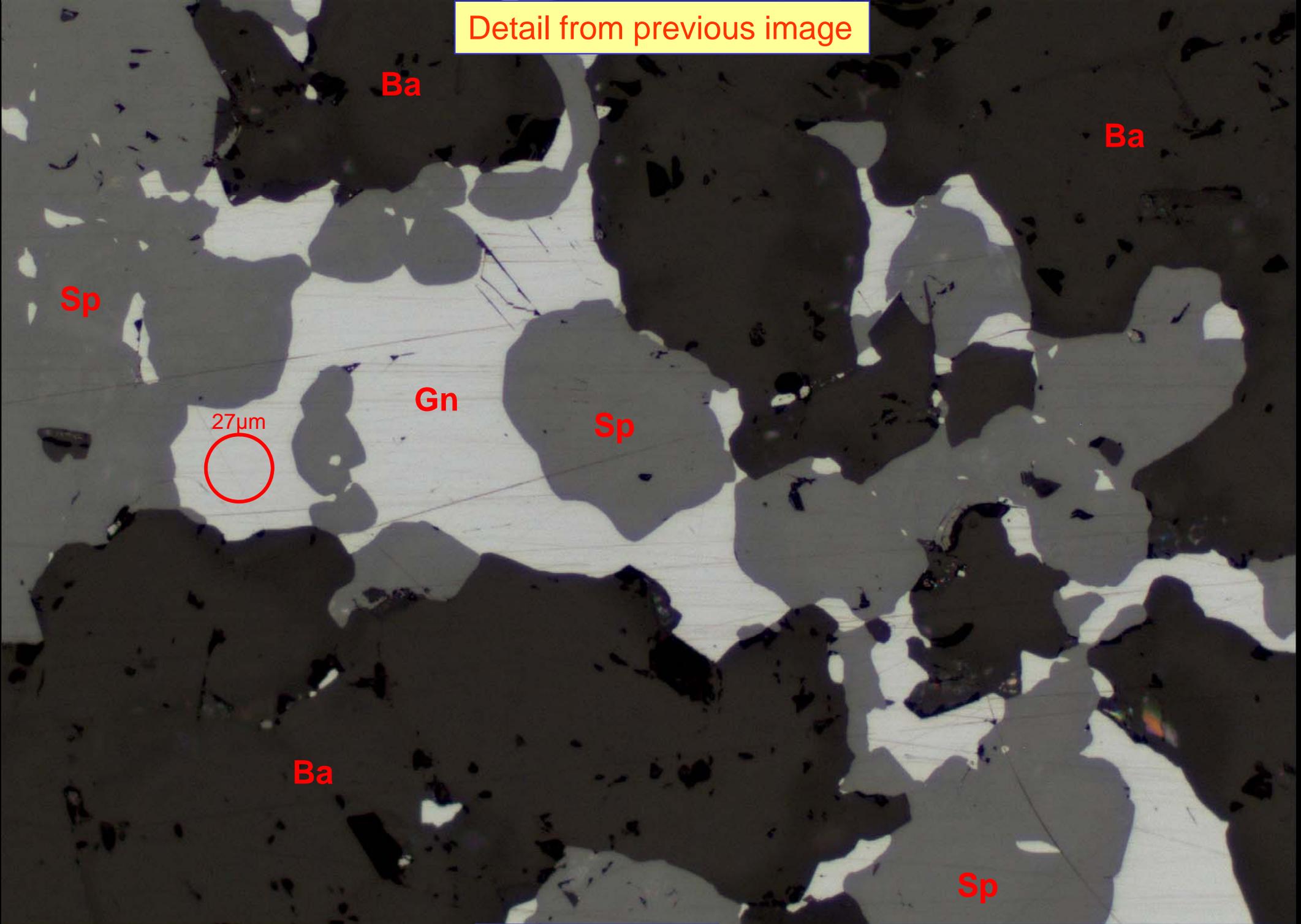


Image width 515µm

Reflected Light

DDH 411R-D1 1392746 f

Pyrite band, including distinctive sericite-pyrite clot

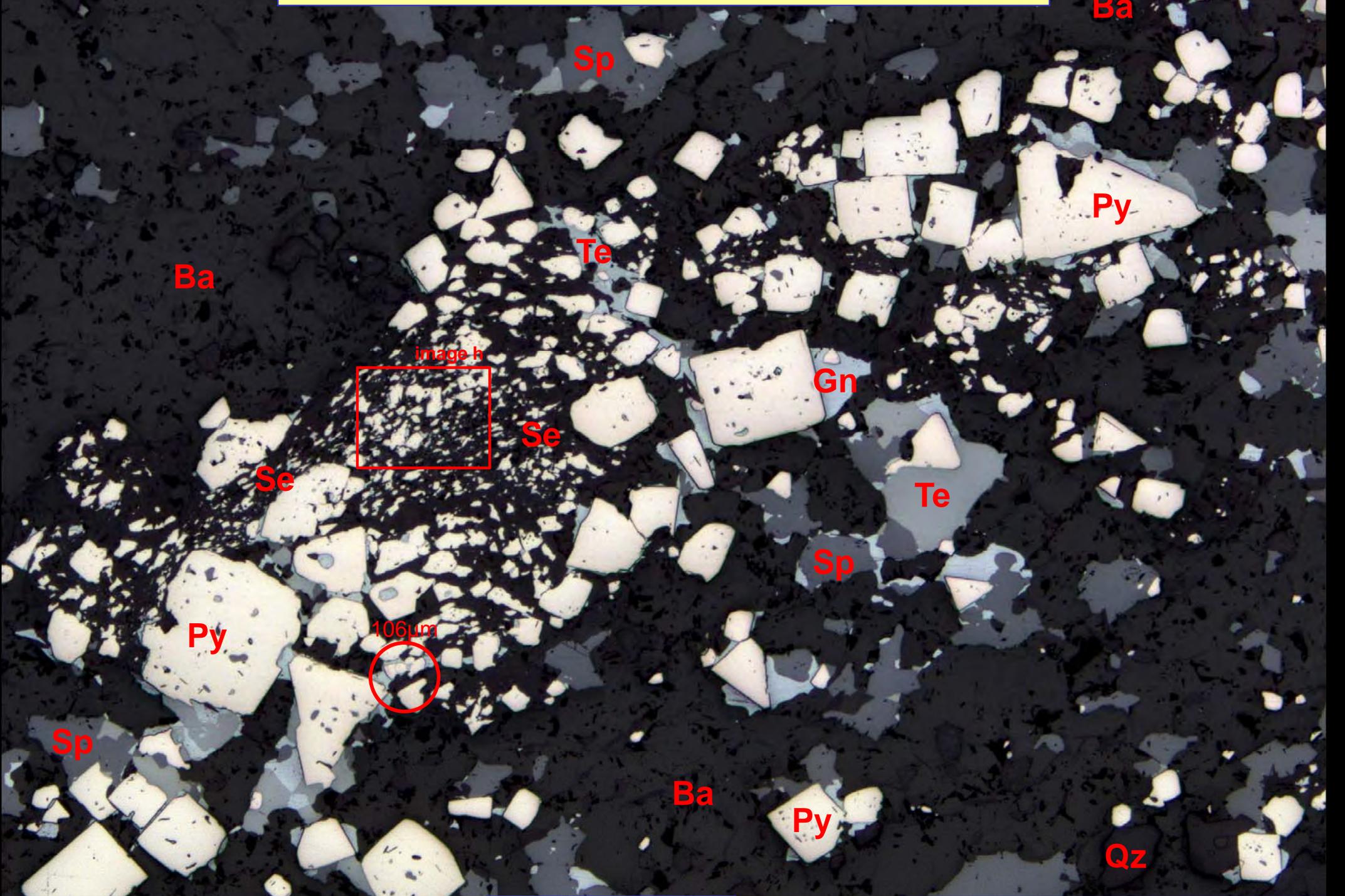
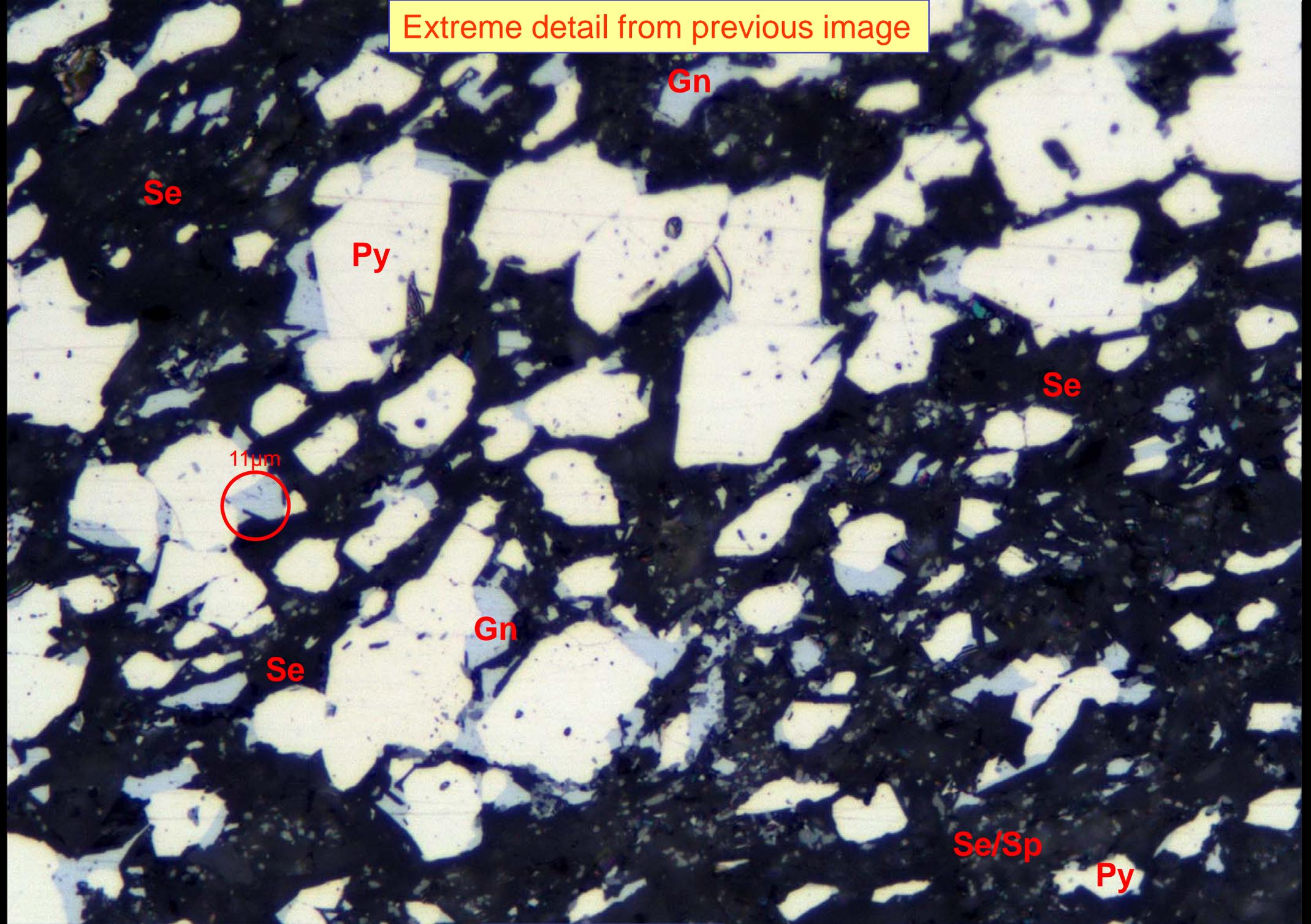


Image width 2.1mm

Reflected Light

DDH411R-D1 1392746 g

Extreme detail from previous image



Se

Py

Gn

Se

11µm

Gn

Se

Se/Sp

Py

Image width 206µm

Reflected Light

DDH411R-D1 1392746 h

Tetrahedrite-rich band

106µm



Py

Gn

Te

Sp

Ba

Gn

Qz

Sp

Te

Te

Ba

Sp

Ba

Py

Ba

Image width 2.1mm

Reflected Light

DDH411R-D1 1392746 i

Te

Coarse tetrahedrite

Gn

Sp

Py

Sp

Qz

Se

Ba

53µm

Te

Py

Gn

Ba

Te

Qz

Qz

Te

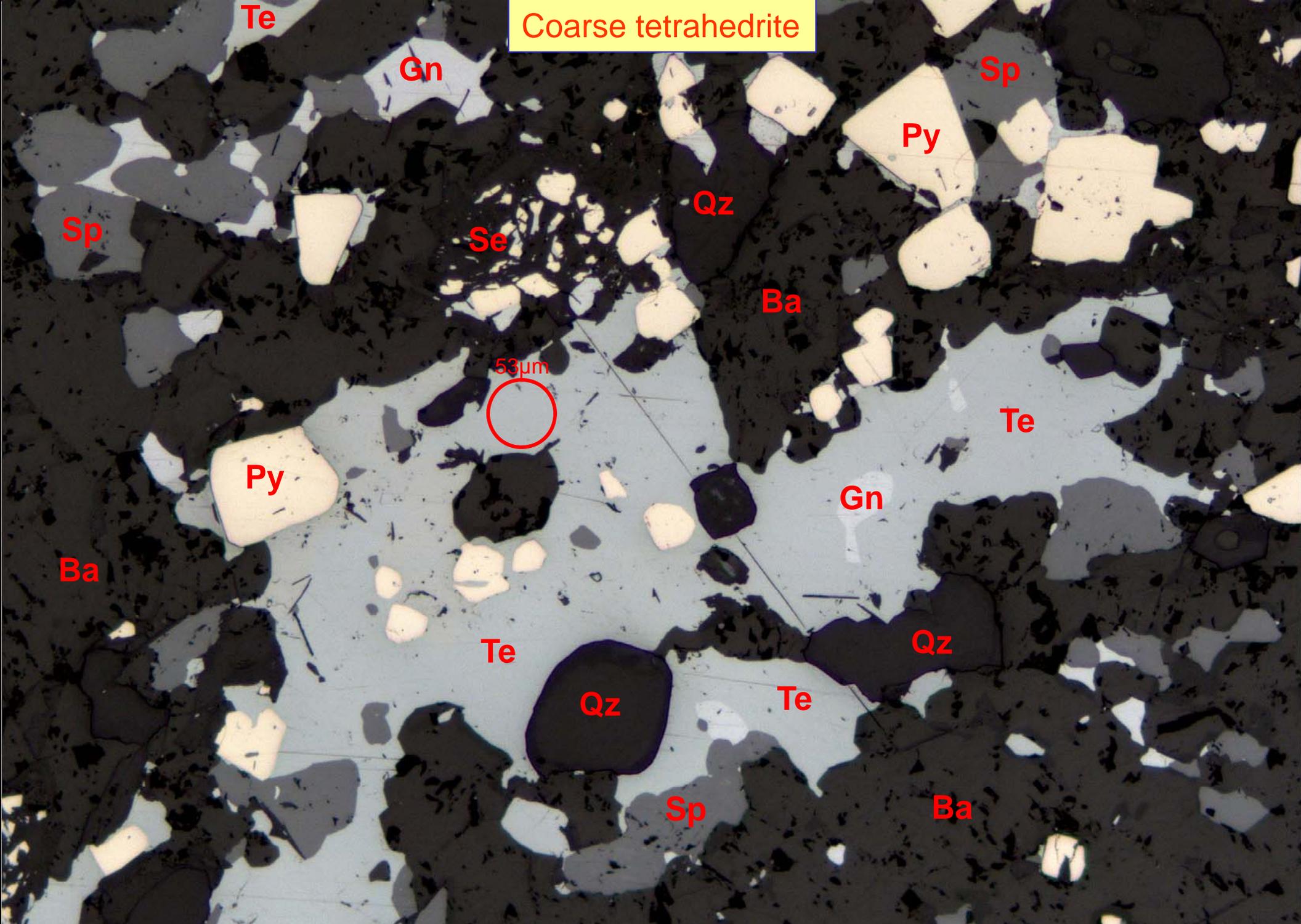
Sp

Ba

Image width 1.0mm

Reflected Light

DDH 411R-D1 1392746 j



Distinctive, rotated sericite-pyrite clots

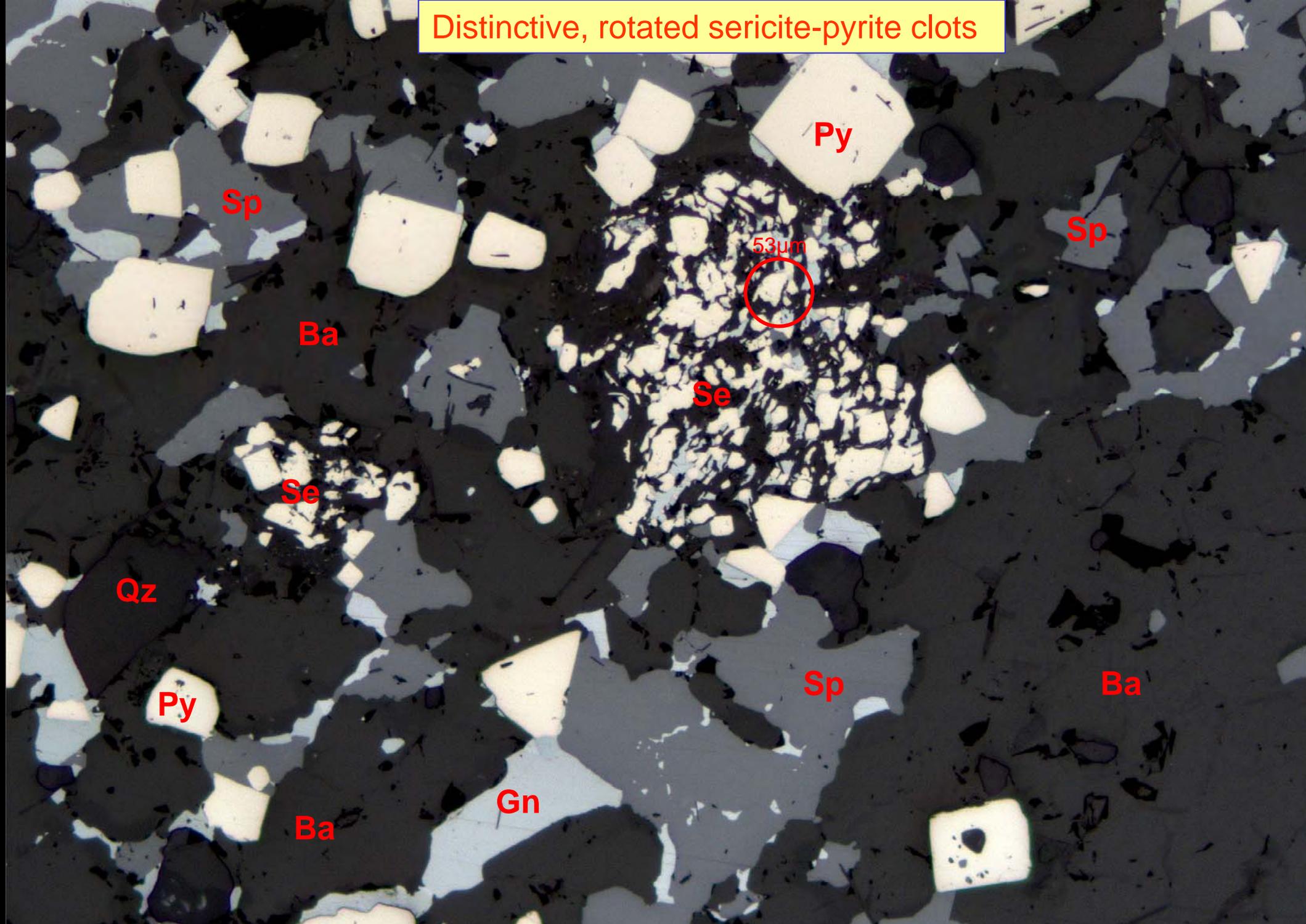


Image width 1.0mm

Reflected Light

DDH 411R-D1 1392746 k

Tetrahedrite hosted by barite – note colour variation

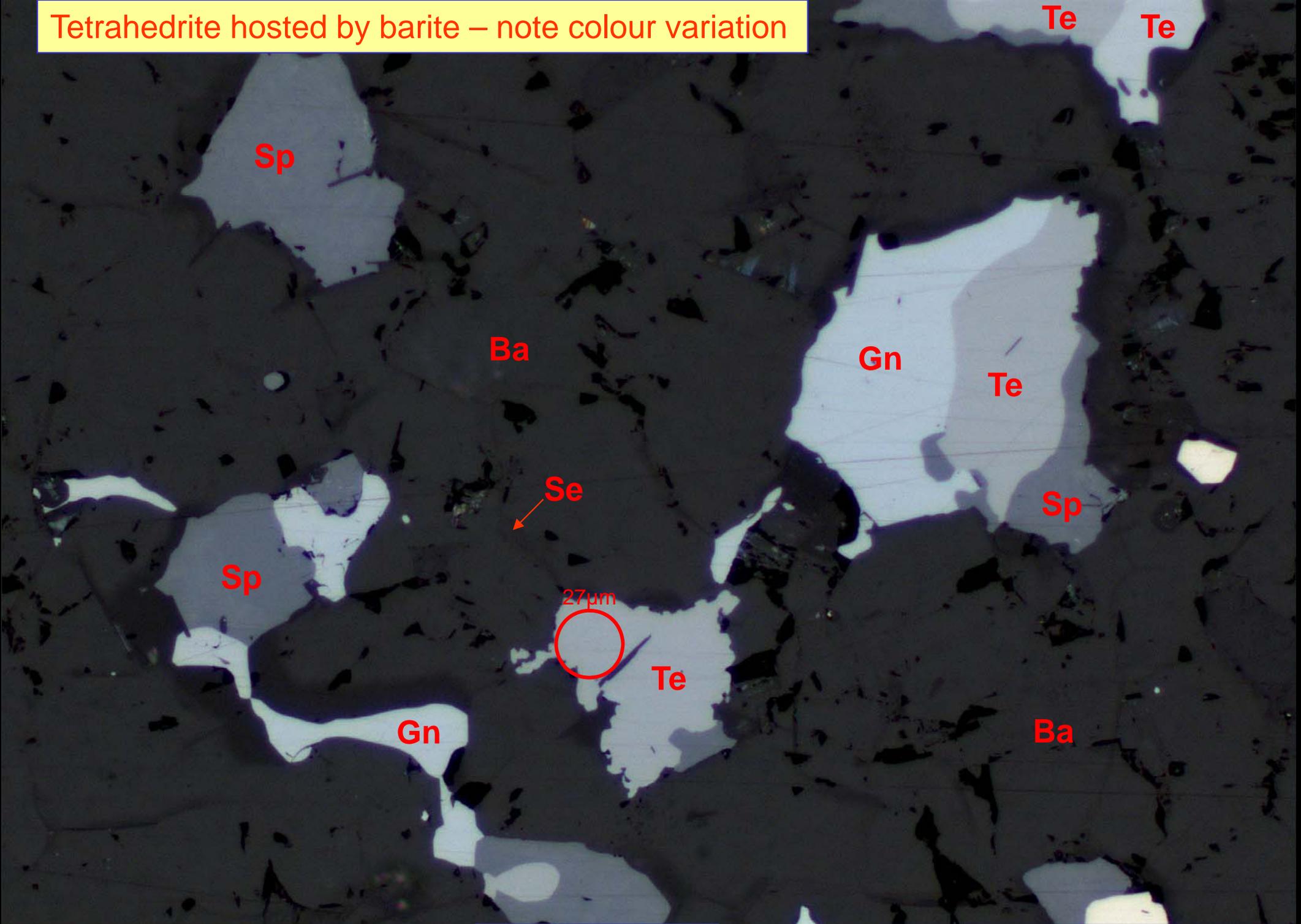


Image width 515µm

Reflected Light

DDH 411R-D1 1392746 I

Sample Scan

Offcut Assay

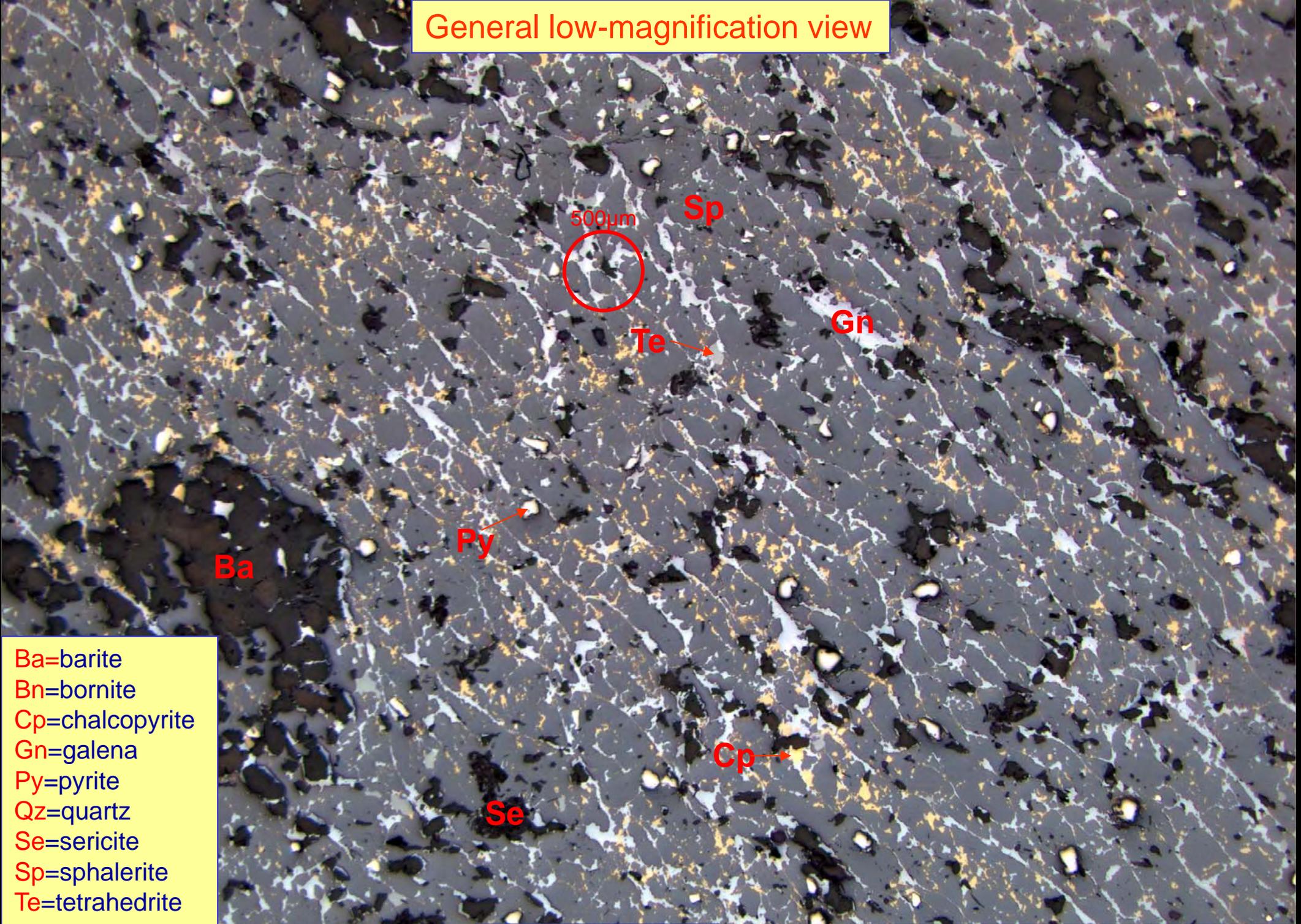
1.29%Cu, 20.0%Pb, 38.6%Zn, 4.52%Ba, 0.07%As, 3.07%Fe, 530ppmAg



Image width ~40mm

DDH 411R-D1 1392747

General low-magnification view



- Ba=barite
- Bn=bornite
- Cp=chalcopyrite
- Gn=galena
- Py=pyrite
- Qz=quartz
- Se=sericite
- Sp=sphalerite
- Te=tetrahedrite

Image width 8.2mm

Reflected Light

DDH411R-D1 1392747 a

Strongly annealed, massive sphalerite with aligned galena

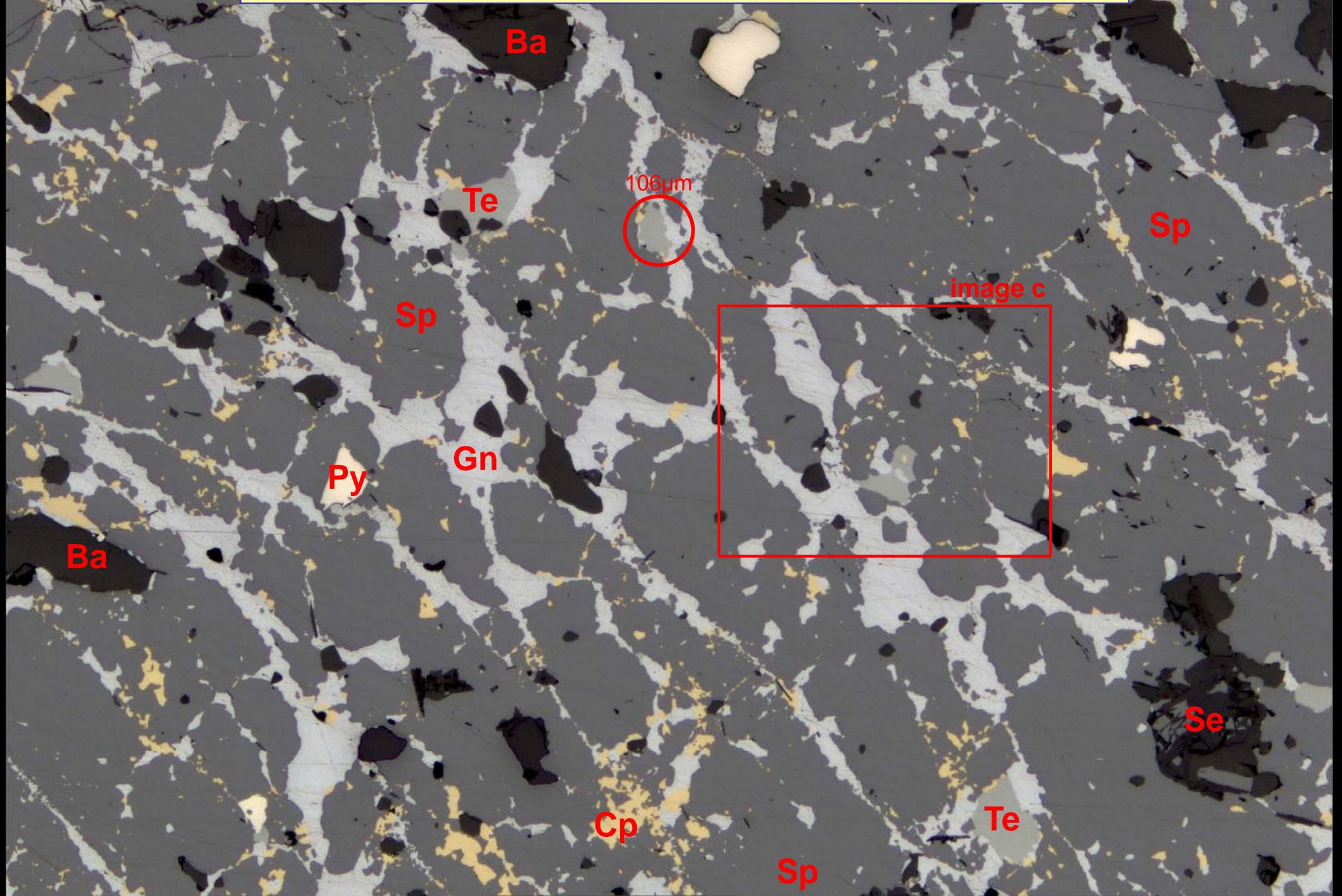


Image width 2.1mm

Reflected Light

DDH 411R-D1 1392747 b

Detail from previous image

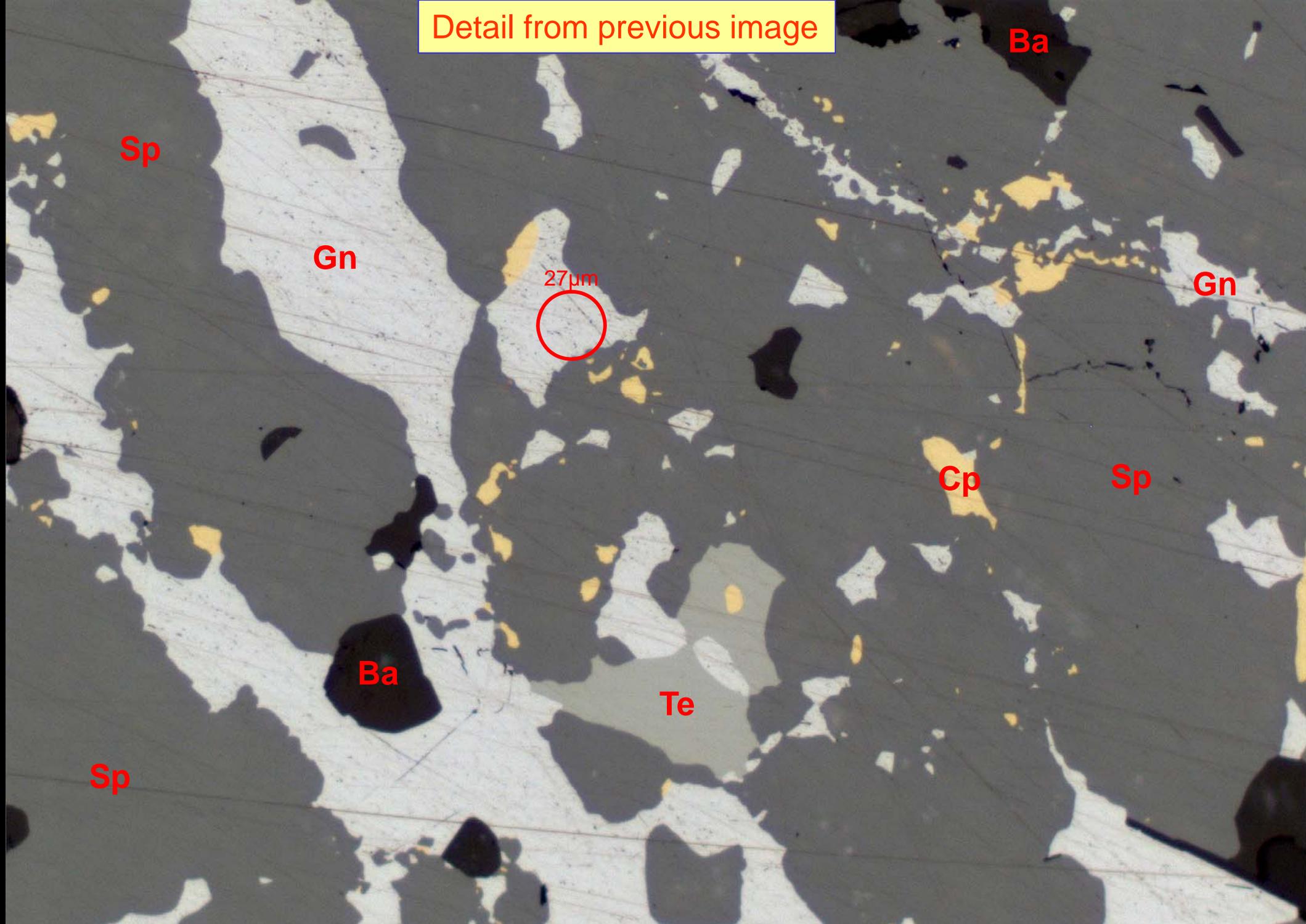


Image width 515µm

Reflected Light

DDH 411R-D1 1392747 c

Massive sphalerite-pyrite-galena with sericite clots

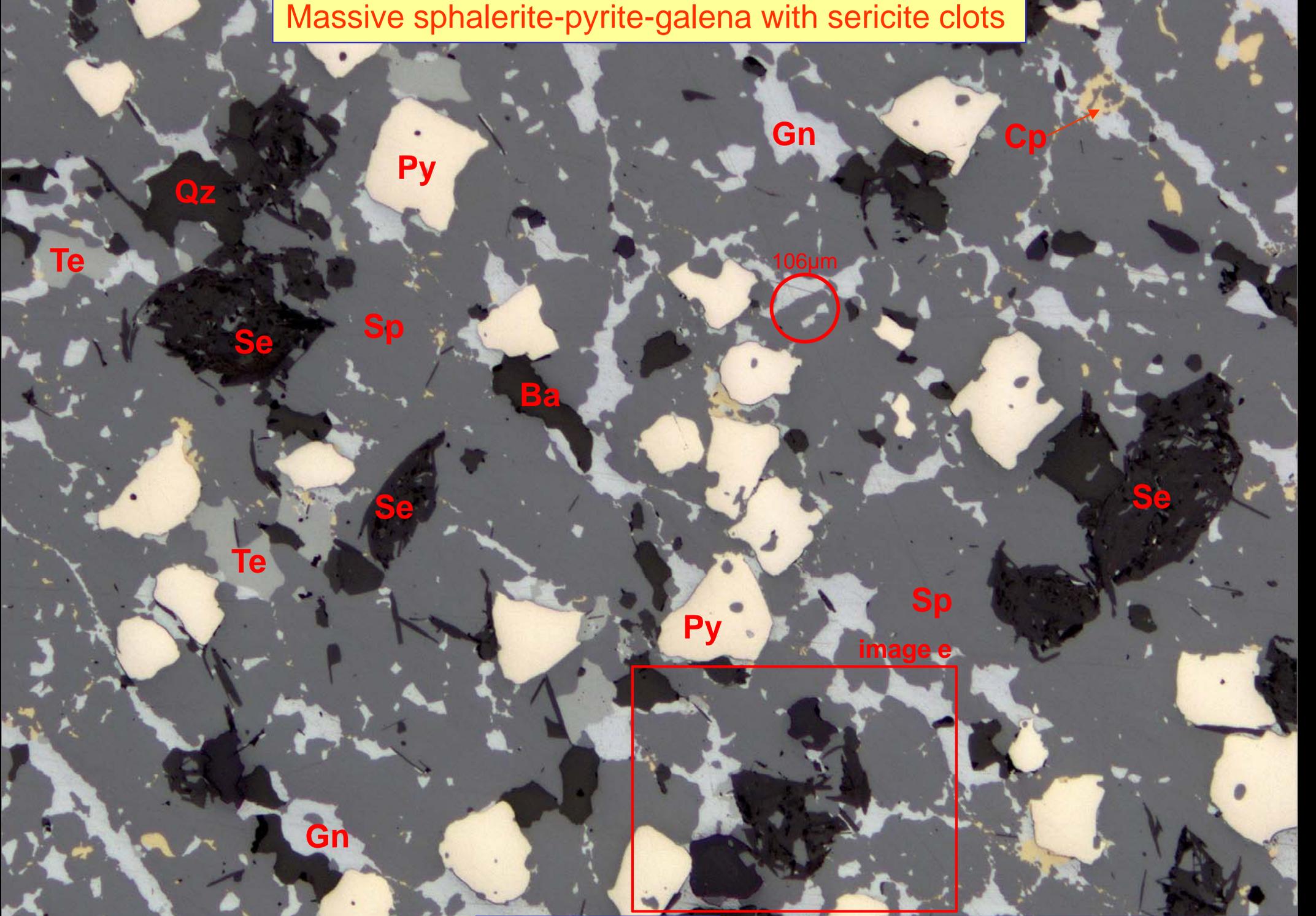


Image width 2.1mm

Reflected Light

DDH 411R-D1 1392747 d

Detail from previous image

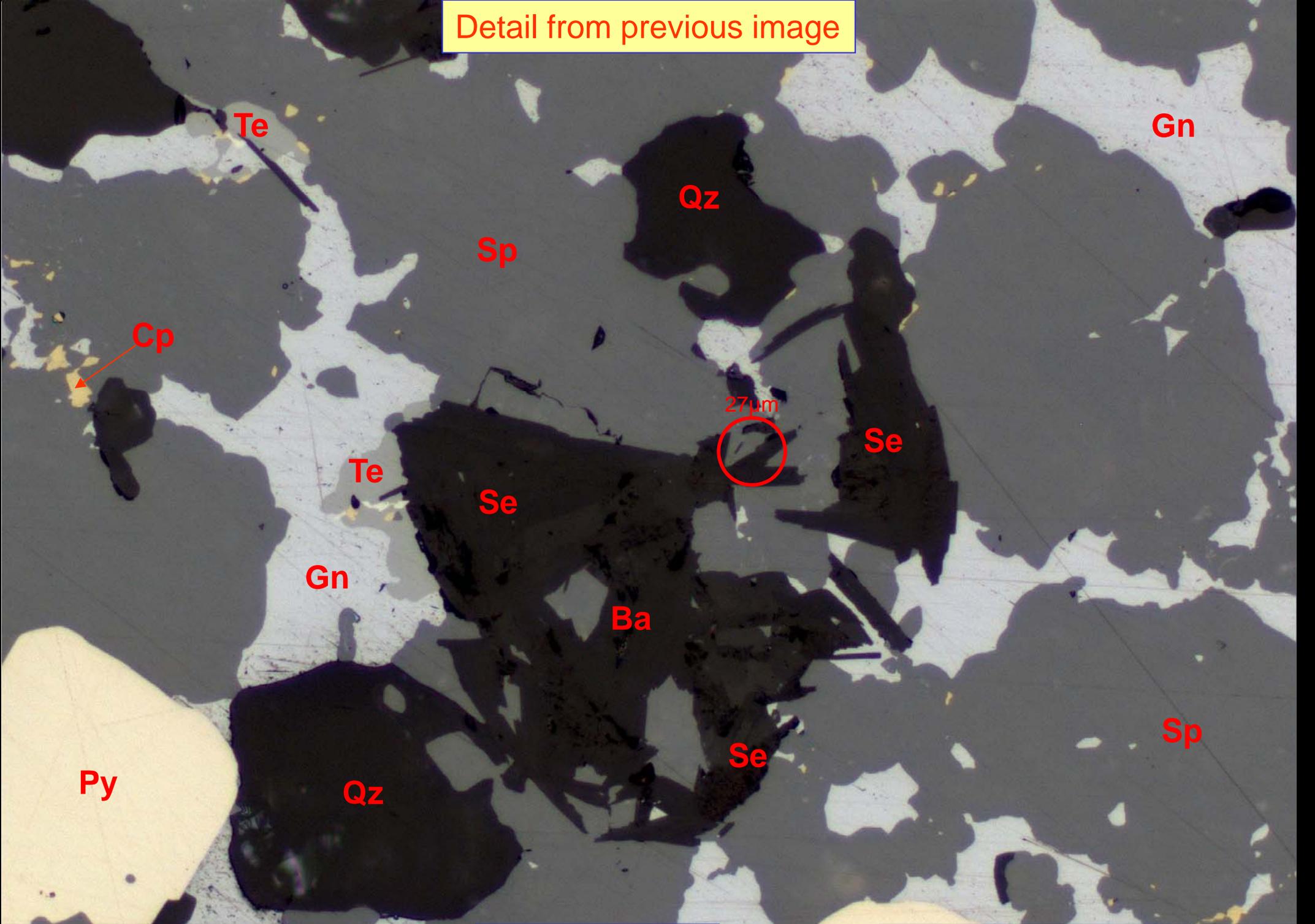


Image width 515µm

Reflected Light

DDH 411R-D1 1392747 e

Barite with adjacent inclusion-free sphalerite

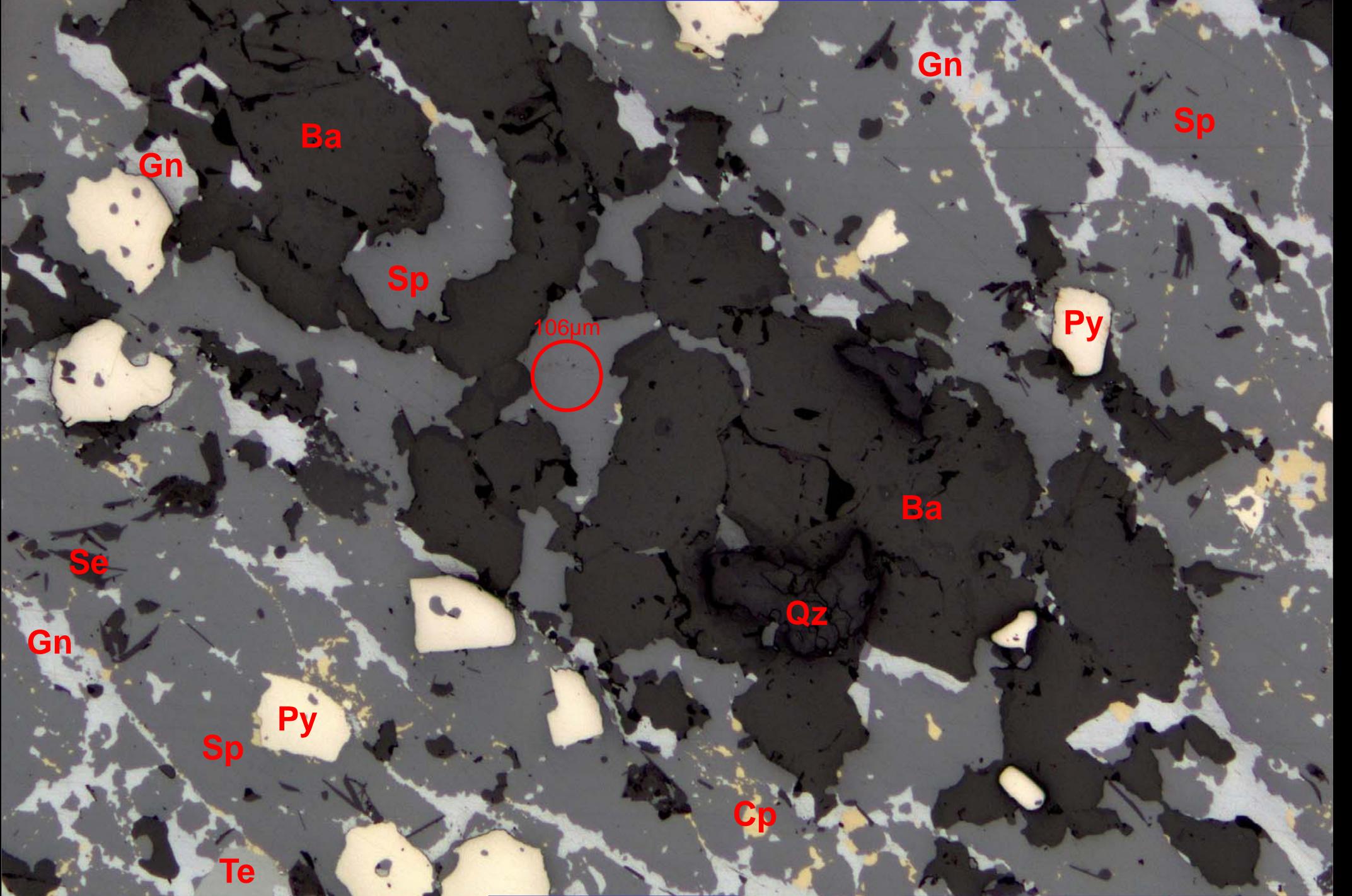


Image width 2.1mm

Reflected Light

DDH 411R-D1 1392747 f

Strong galena-chalcopyrite fabric in annealed sphalerite

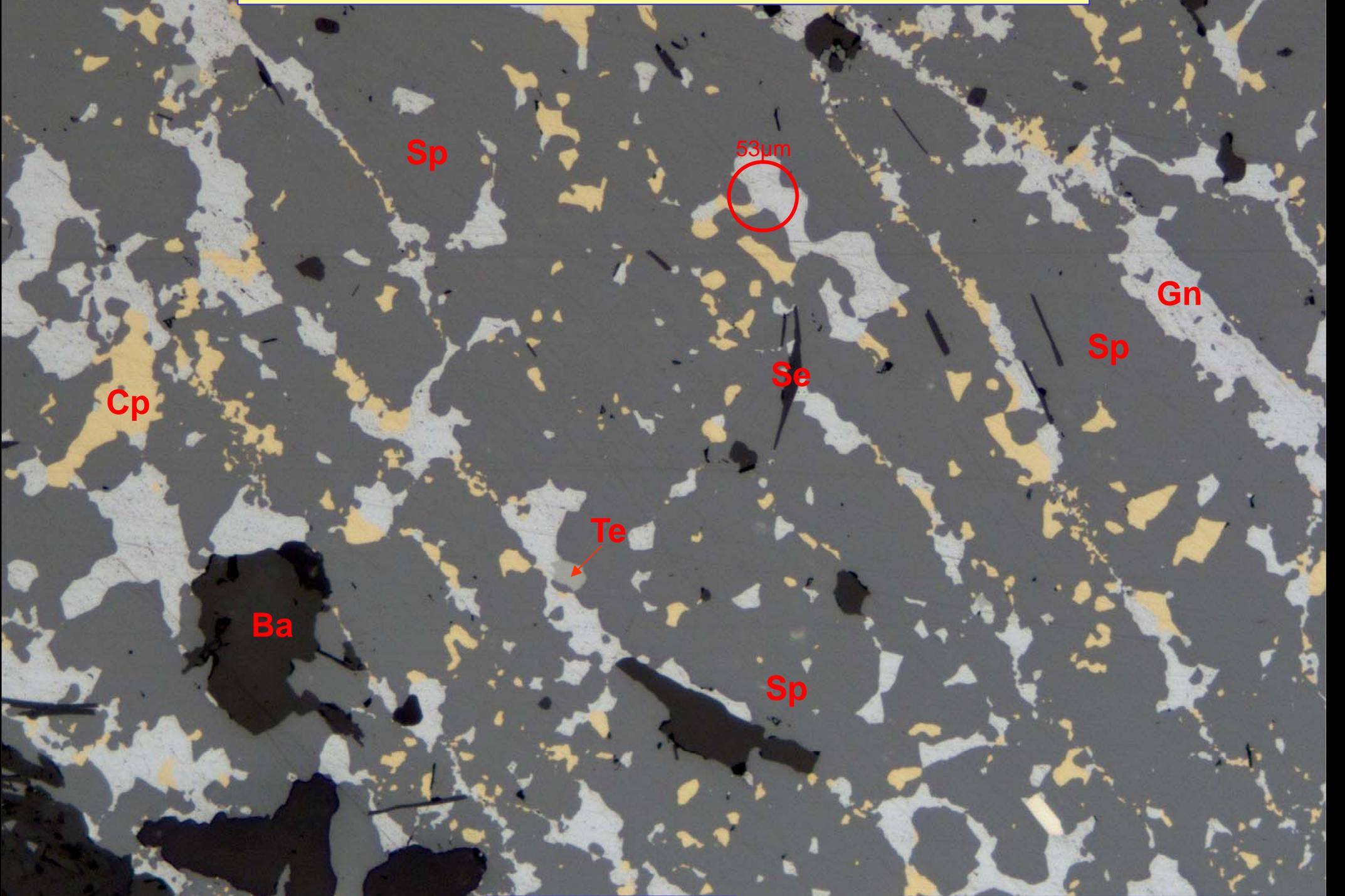


Image width 1.0mm

Reflected Light

DDH 411R-D1 1392747 g

Tetrahedrite coarser than galena/chalcopyrite; sericite clots

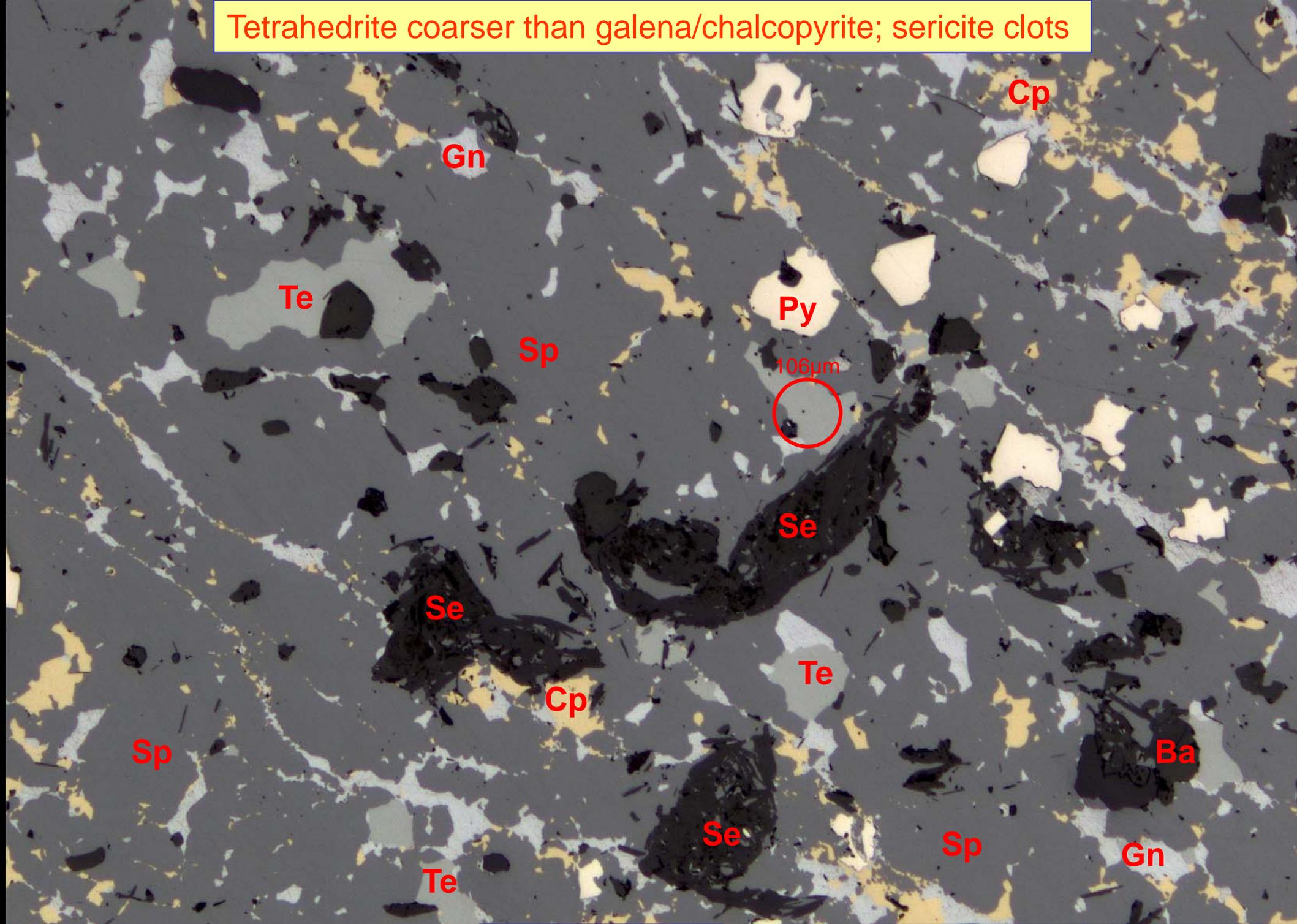


Image width 2.1mm

Reflected Light

DDH 411R-D1 1392747 h

Coarse galena in barite shadow zone

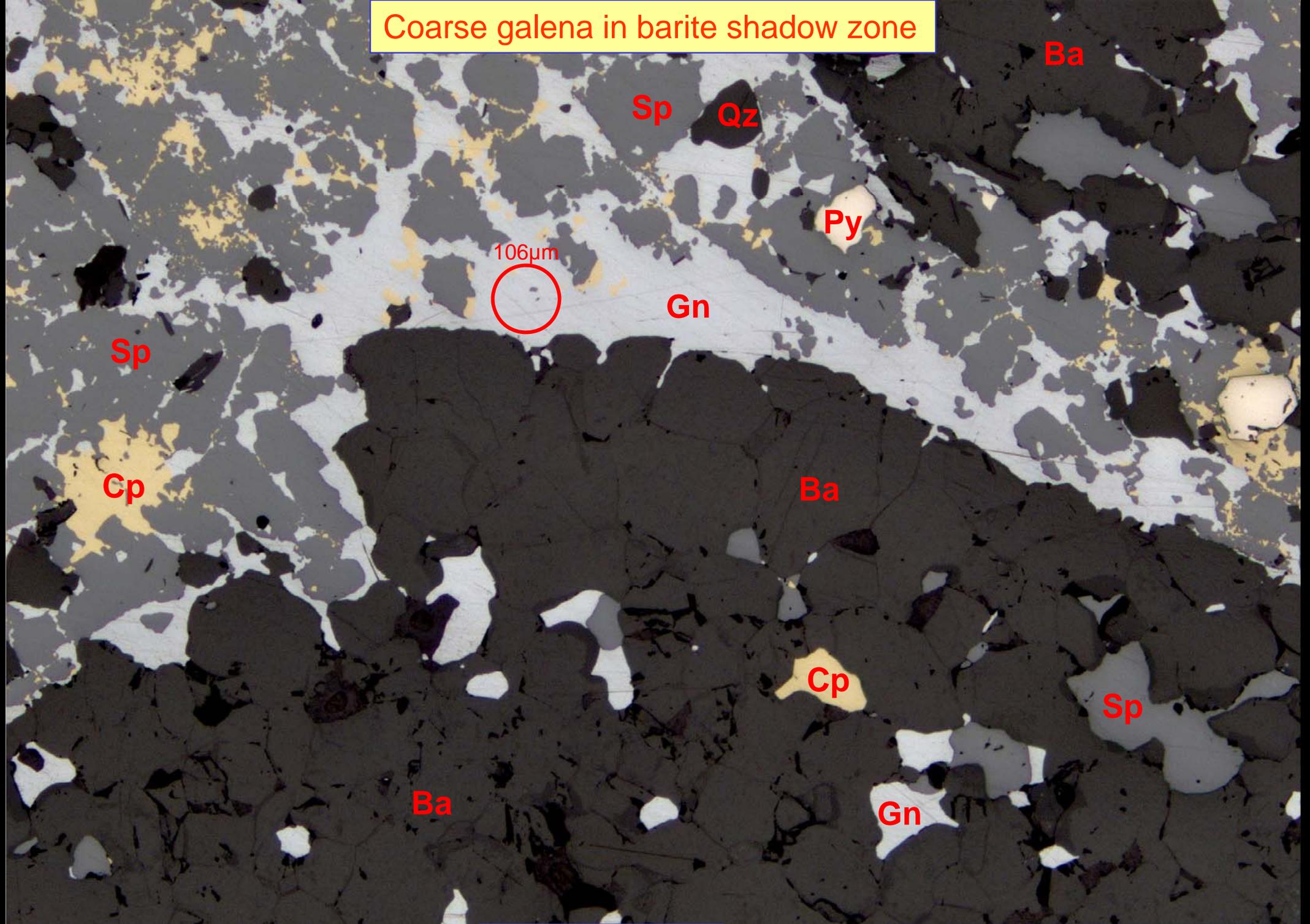


Image width 2.1mm

Reflected Light

DDH 411R-D1 1392747 i

Intricate chalcopyrite

Ba

27µm

Sp

Cp

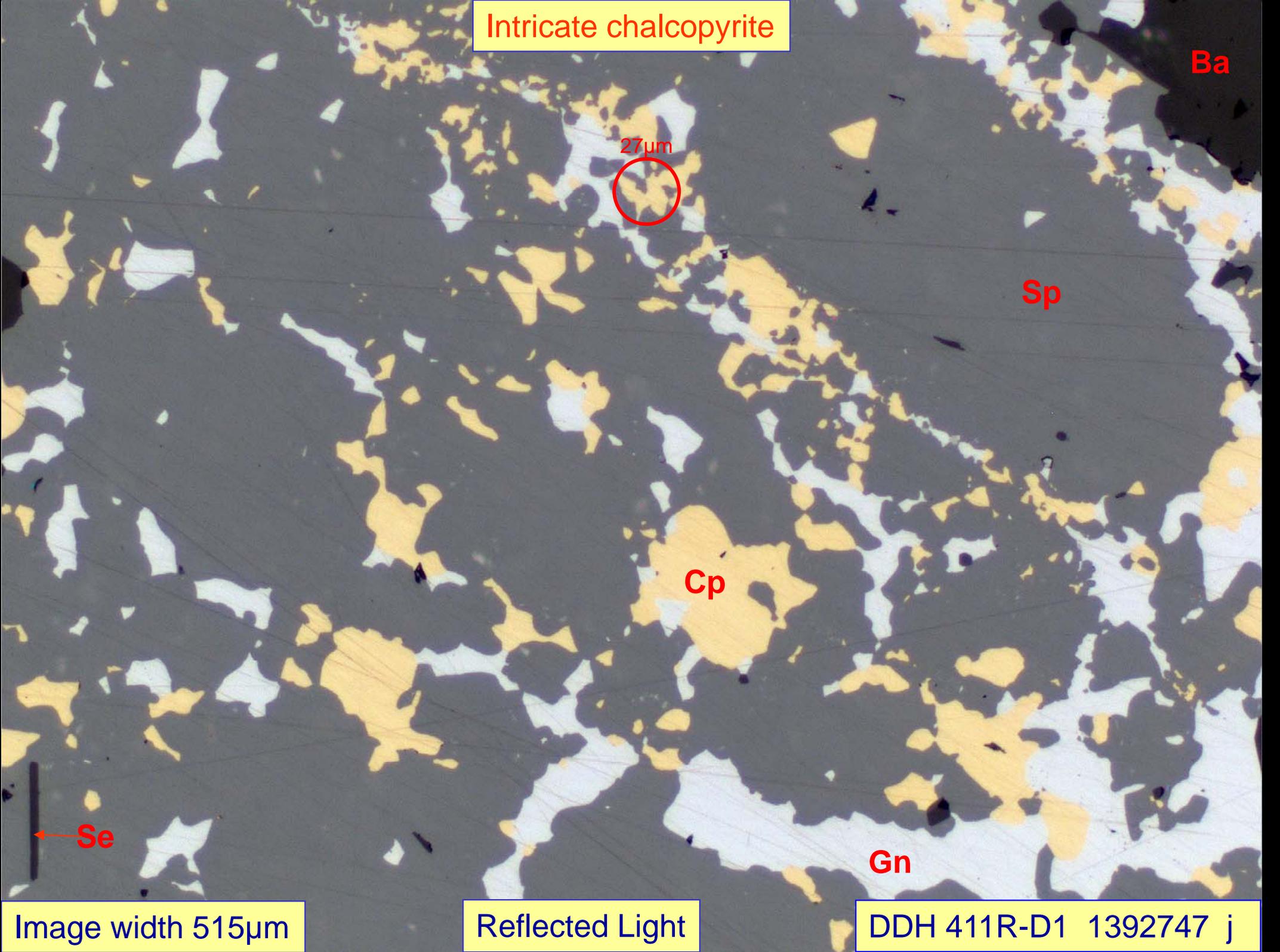
Gn

Se

Image width 515µm

Reflected Light

DDH 411R-D1 1392747 j



Uniform pale colour of sphalerite (low-Fe)

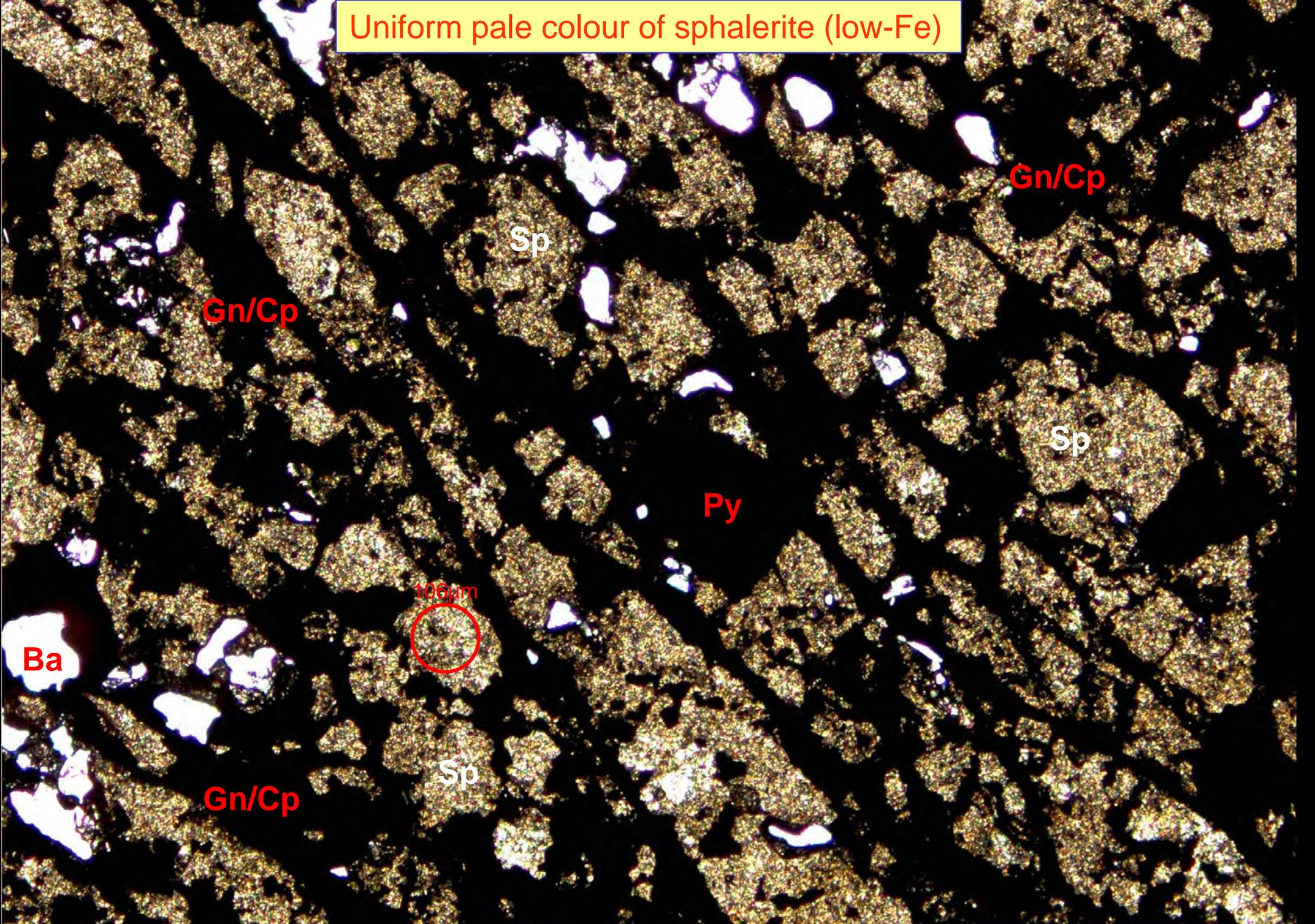
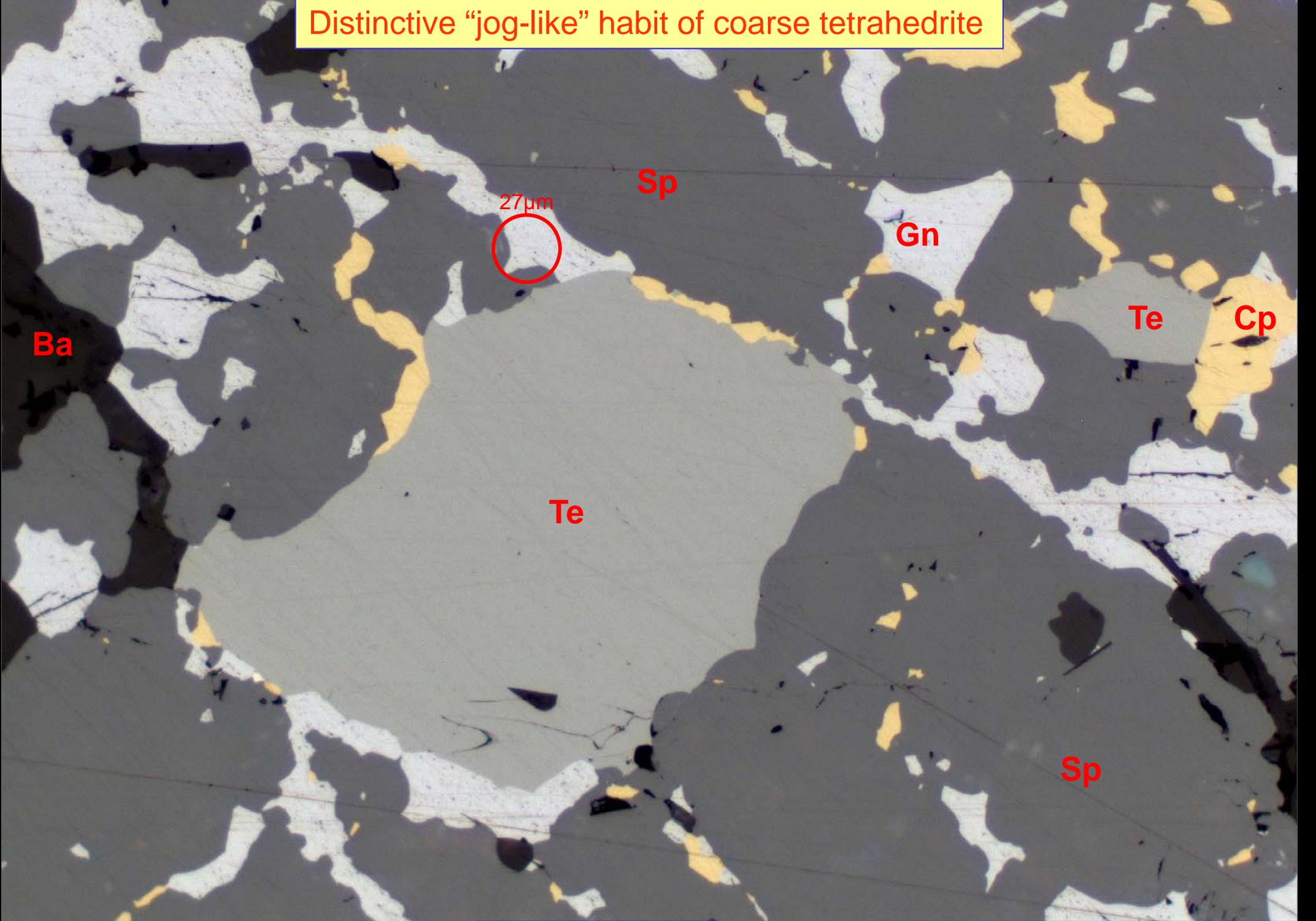


Image width 2.1mm

Transmitted Light

DDH411R-D1 1392747 k

Distinctive "jog-like" habit of coarse tetrahedrite



Ba

Sp

Gn

Te

Cp

Te

Sp

27µm

Image width 515µm

Reflected Light

DDH 411R-D1 1392747 I

Sample Scan

Offcut Assay

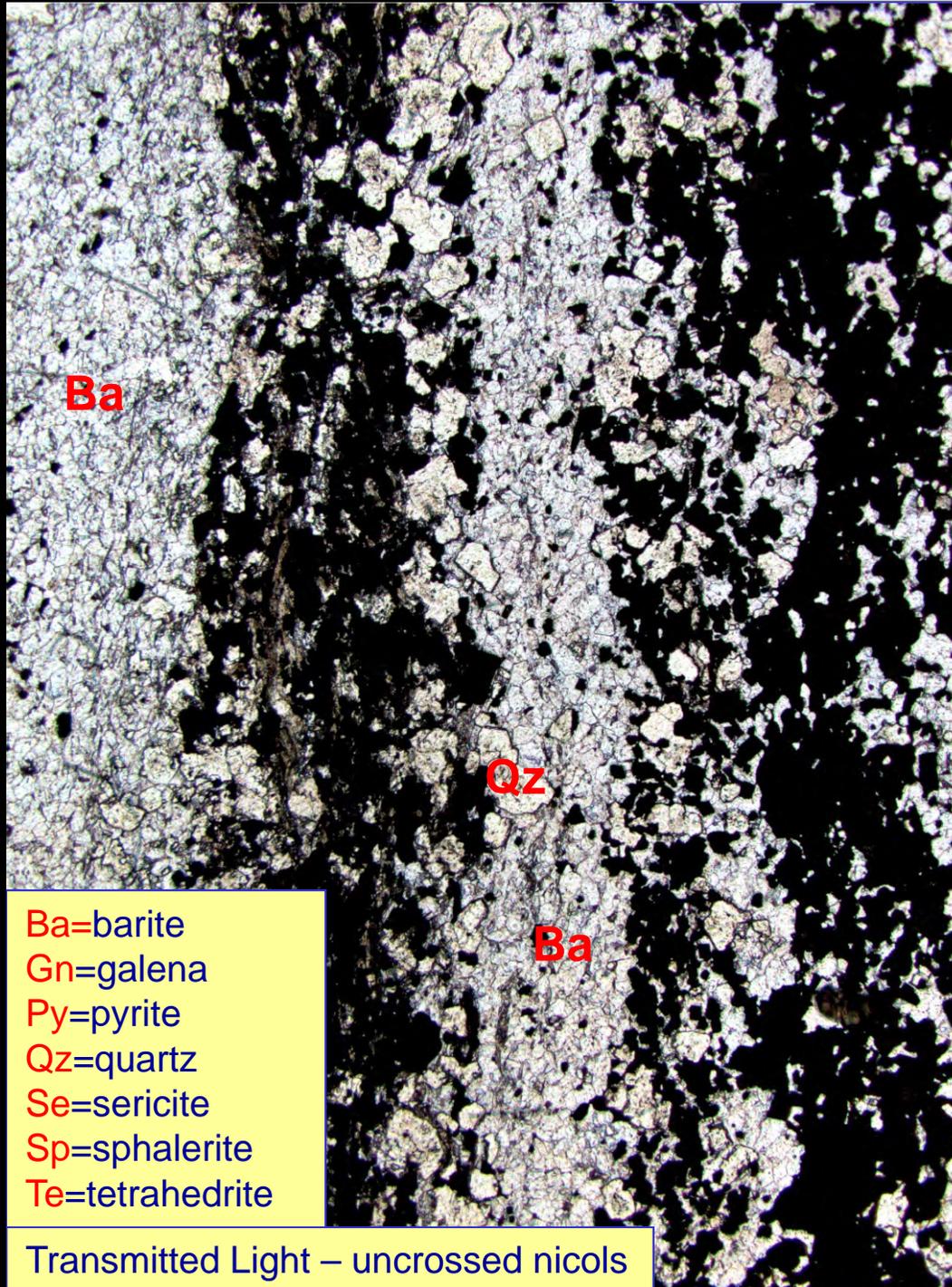
0.07%Cu, 3.57%Pb, 6.88%Zn, 41.4%Ba, <0.05%As, 4.49%Fe, 590ppmAg



Image width ~50mm

DDH 411R-D1 1392748

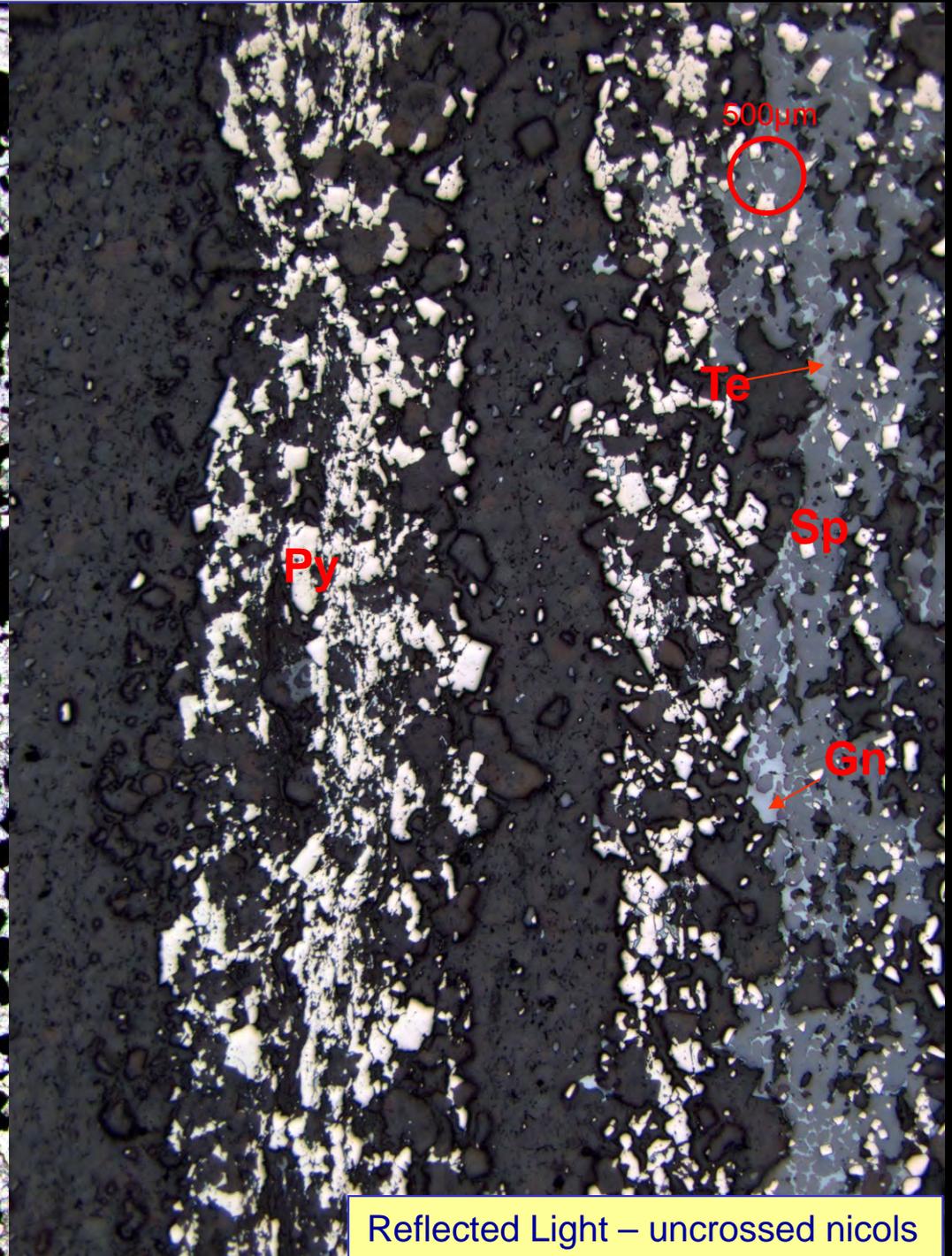
General low-magnification view



Ba=barite
Gn=galena
Py=pyrite
Qz=quartz
Se=sericite
Sp=sphalerite
Te=tetrahedrite

Transmitted Light – uncrossed nicols

Image width 2x 6.2mm



Reflected Light – uncrossed nicols

DDH411R-D1 1392748 a/b

Strongly annealed sphalerite-galena

Qz
Py
Gn

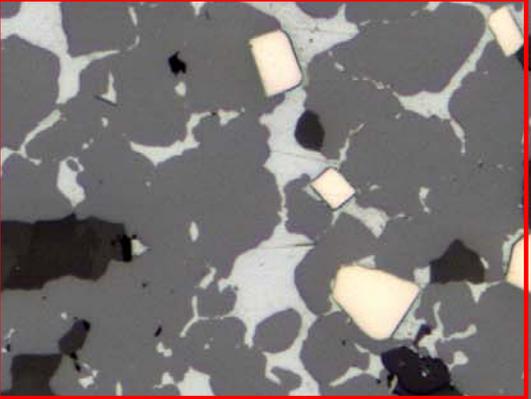
Sp

Ba

image d

106µm

Te



Sp

Gn

Qz

Ba

Image width 2.1mm

Reflected Light

DDH411R-D1 1392748 c

Detail from previous image

Te

27µm

Sp

Qz

Gn

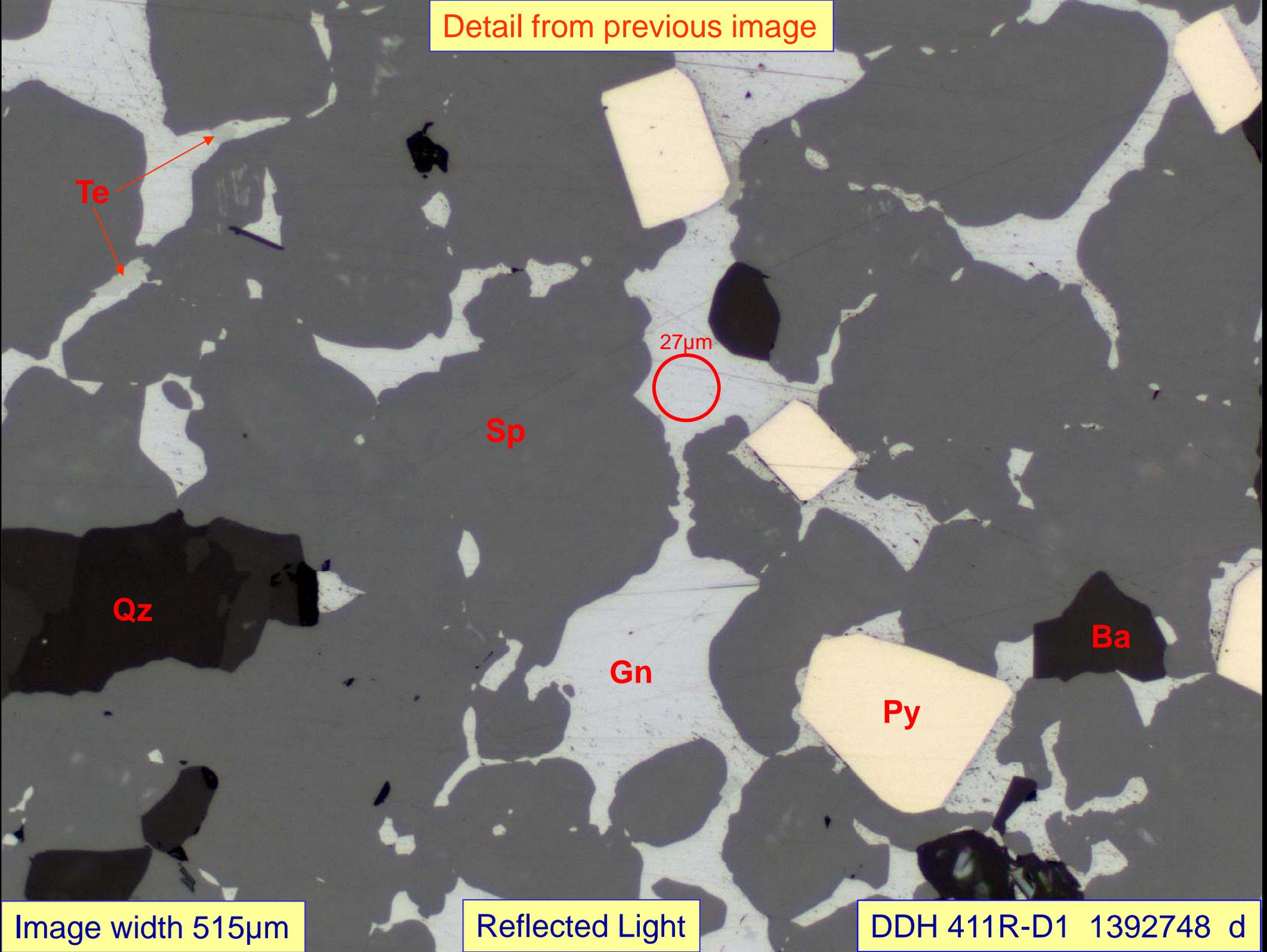
Py

Ba

Image width 515µm

Reflected Light

DDH 411R-D1 1392748 d



Massive annealed sphalerite-galena with barite

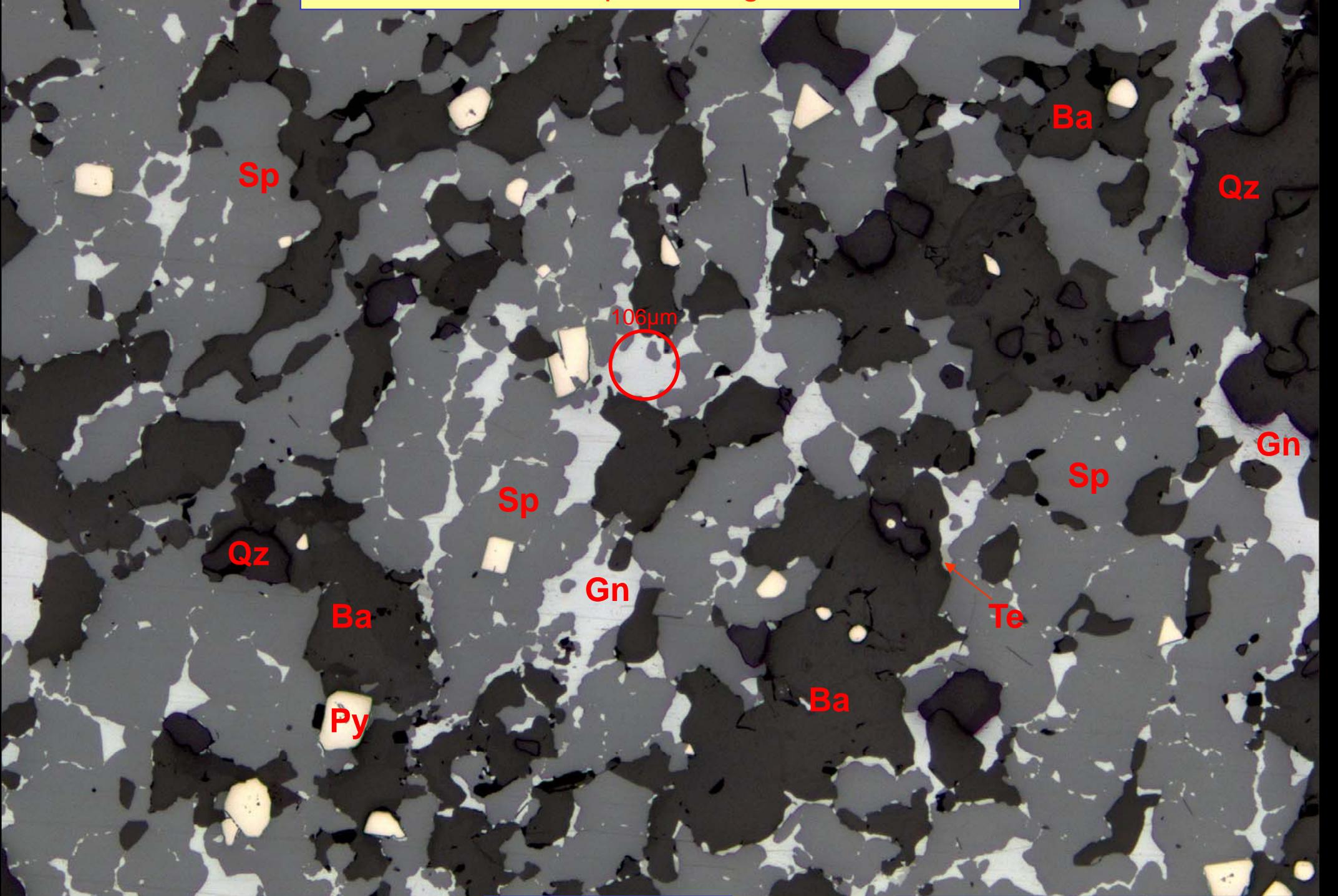


Image width 2.1mm

Reflected Light

DDH411R-D1 1392748 e

Pyrite shattered and aligned in sericite band

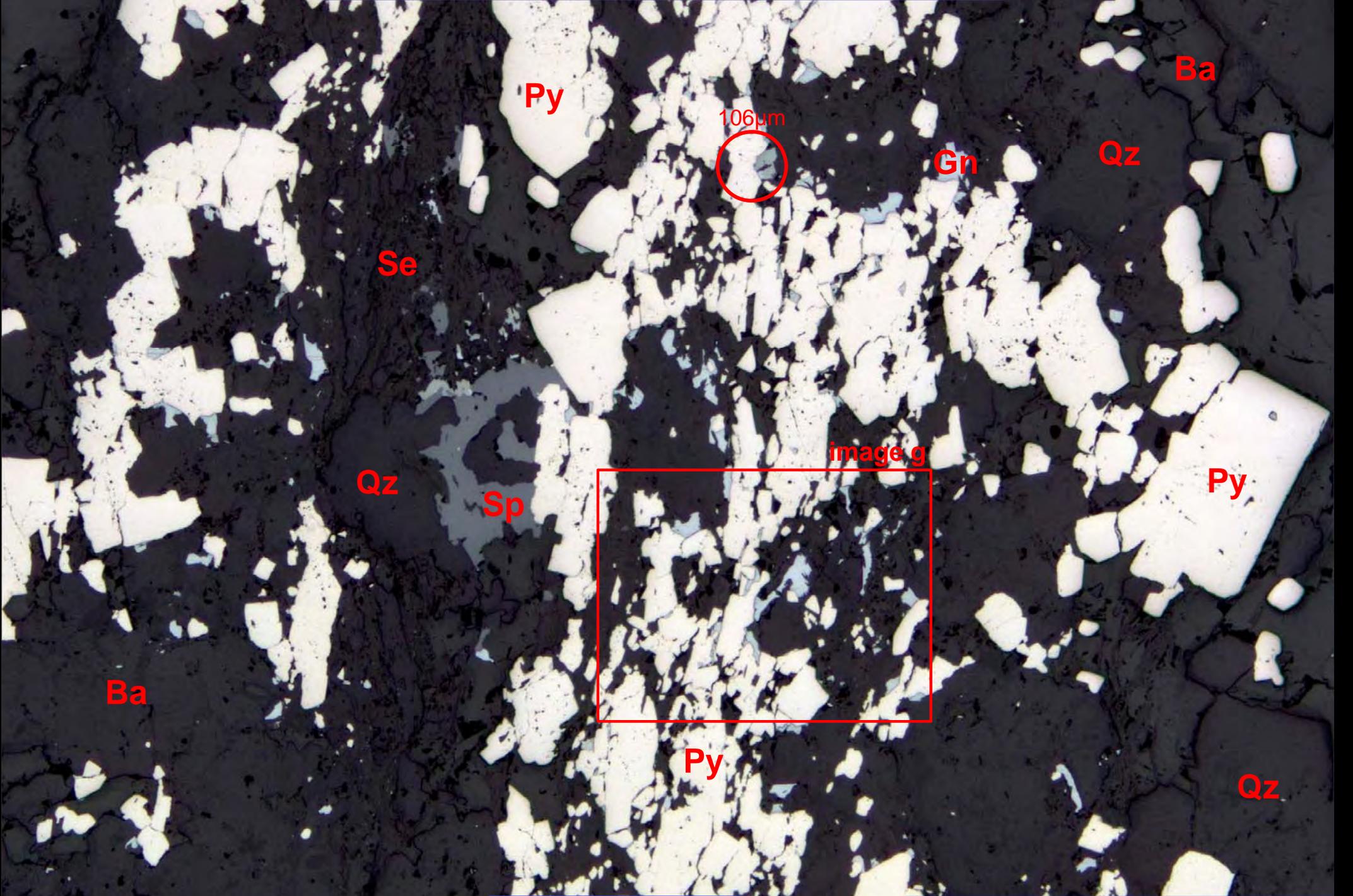


Image width 2.1mm

Reflected Light

DDH411R-D1 1392748 f

Detail from previous image

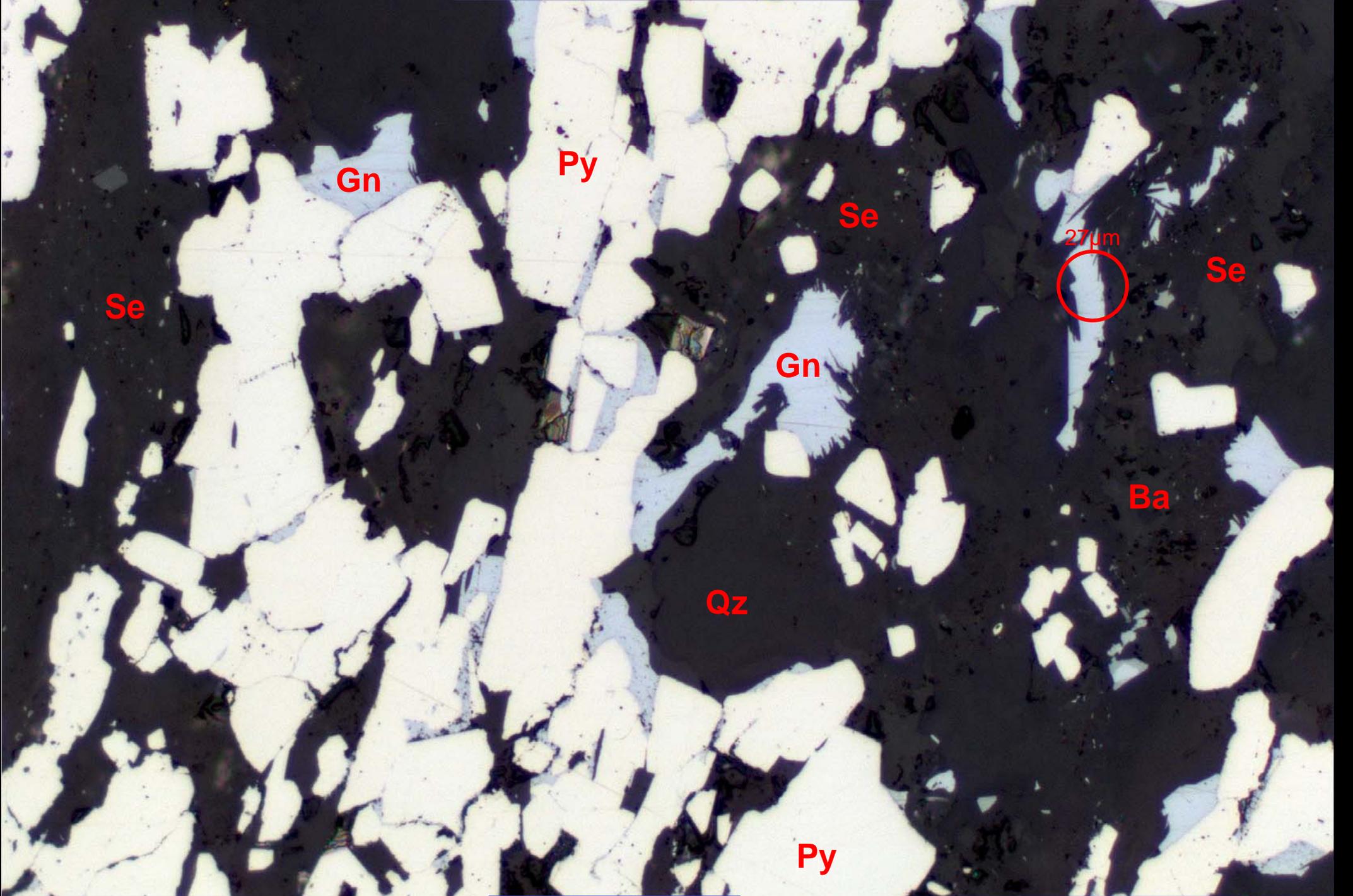
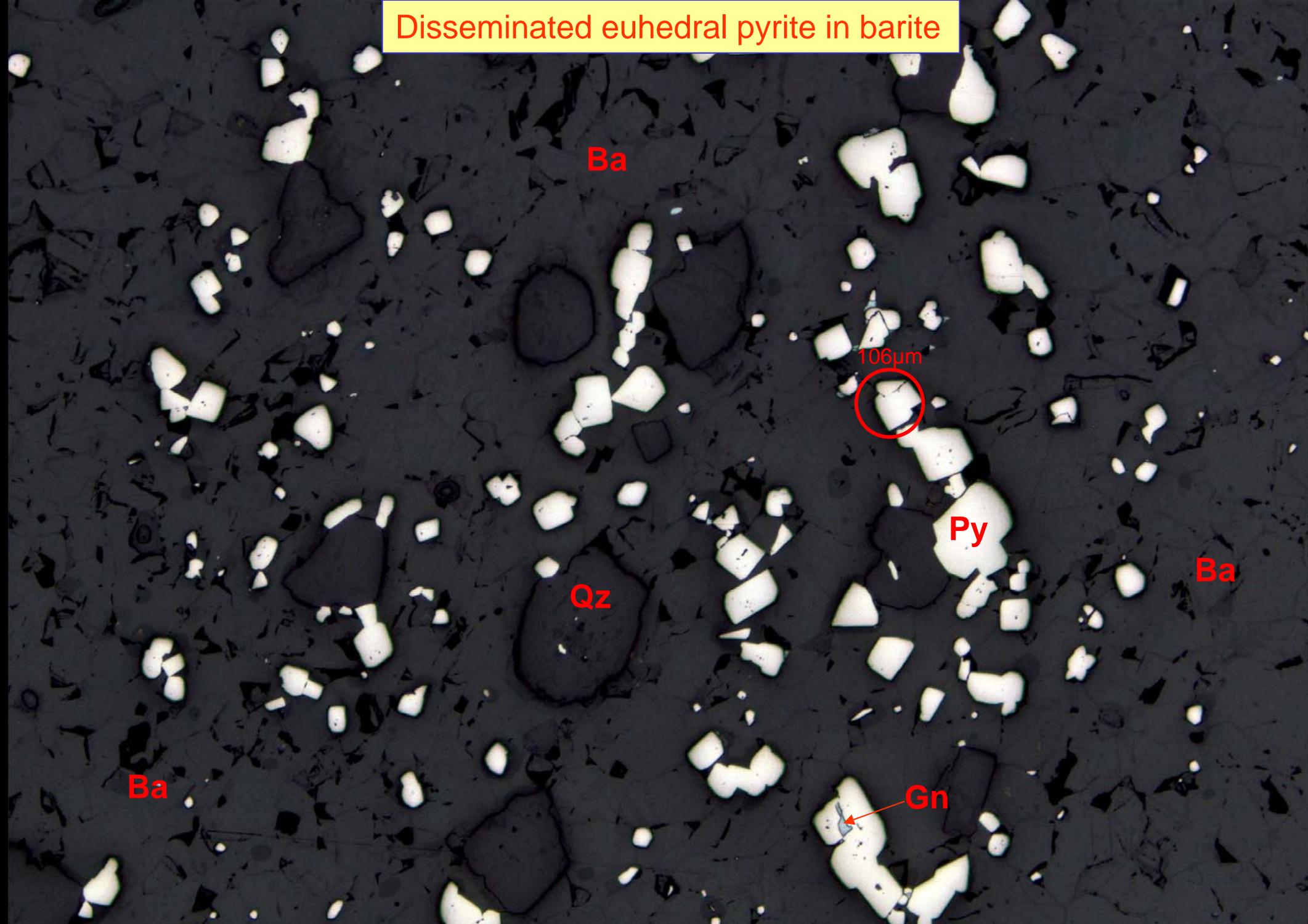


Image width 515µm

Reflected Light

DDH 411R-D1 1392748 g

Disseminated euhedral pyrite in barite



Ba

Qz

Py

Ba

106µm

Gn

Ba

Image width 2.1mm

Reflected Light

DDH411R-D1 1392748 h

Clustered pyrite euhedra in barite

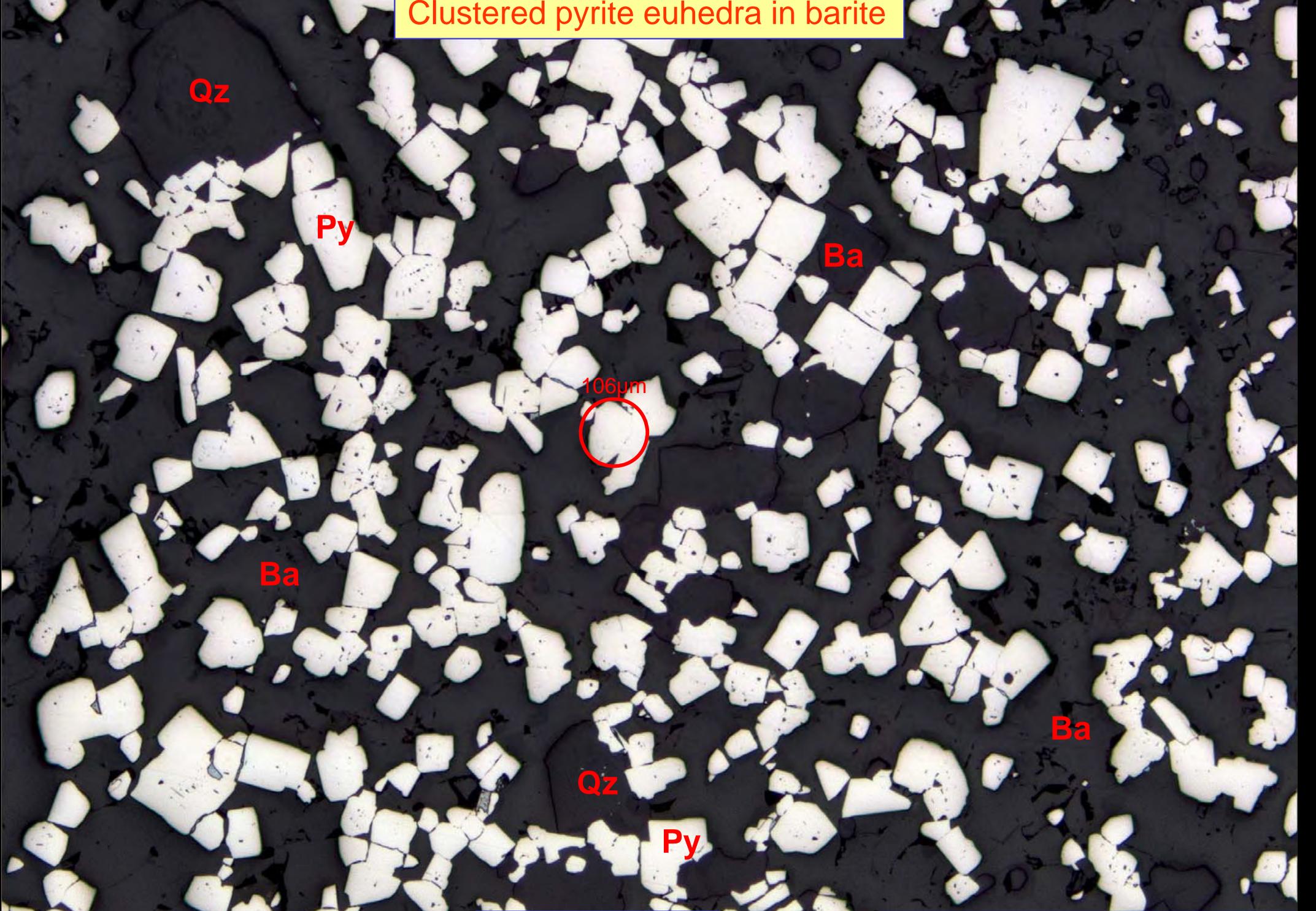


Image width 2.1mm

Reflected Light

DDH411R-D1 1392748 i

Isolated sphalerite-pyrite-galena in massive barite

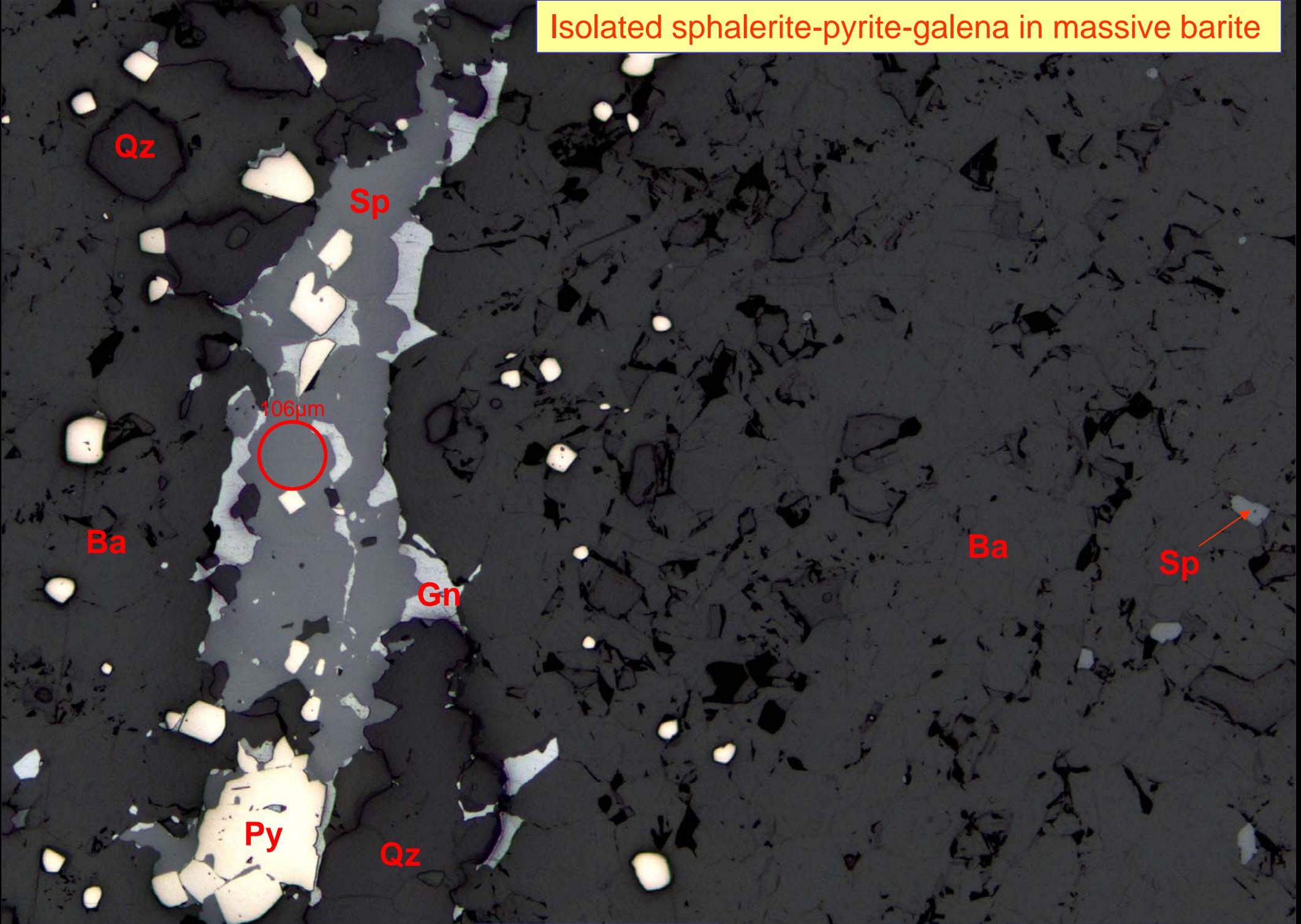


Image width 2.1mm

Reflected Light

DDH 411R-D1 1392748 j

Banded sphalerite-galena-tetrahedrite in barite

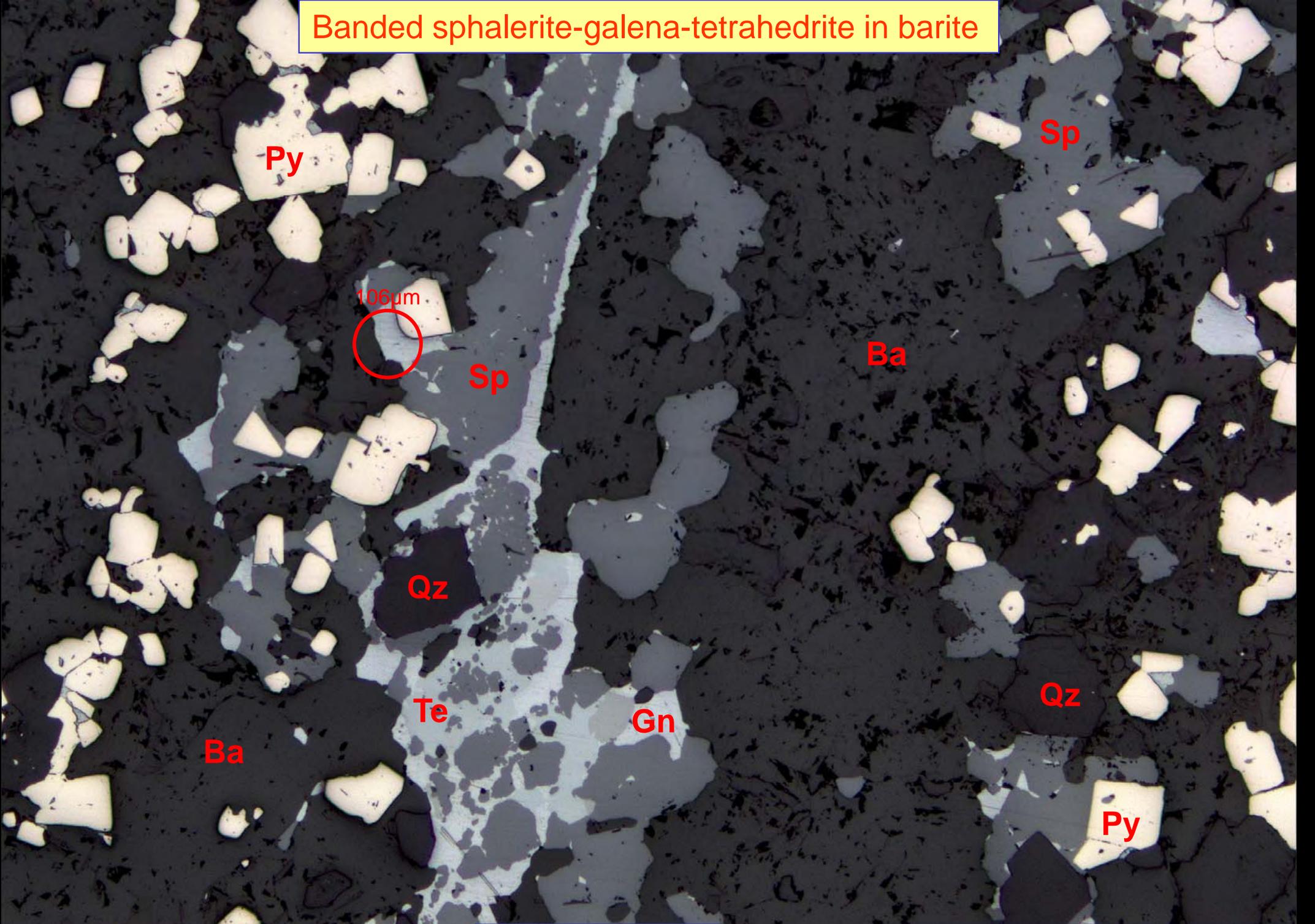


Image width 2.1mm

Reflected Light

DDH411R-D1 1392748 k

Undifferentiated sulphosalt varieties

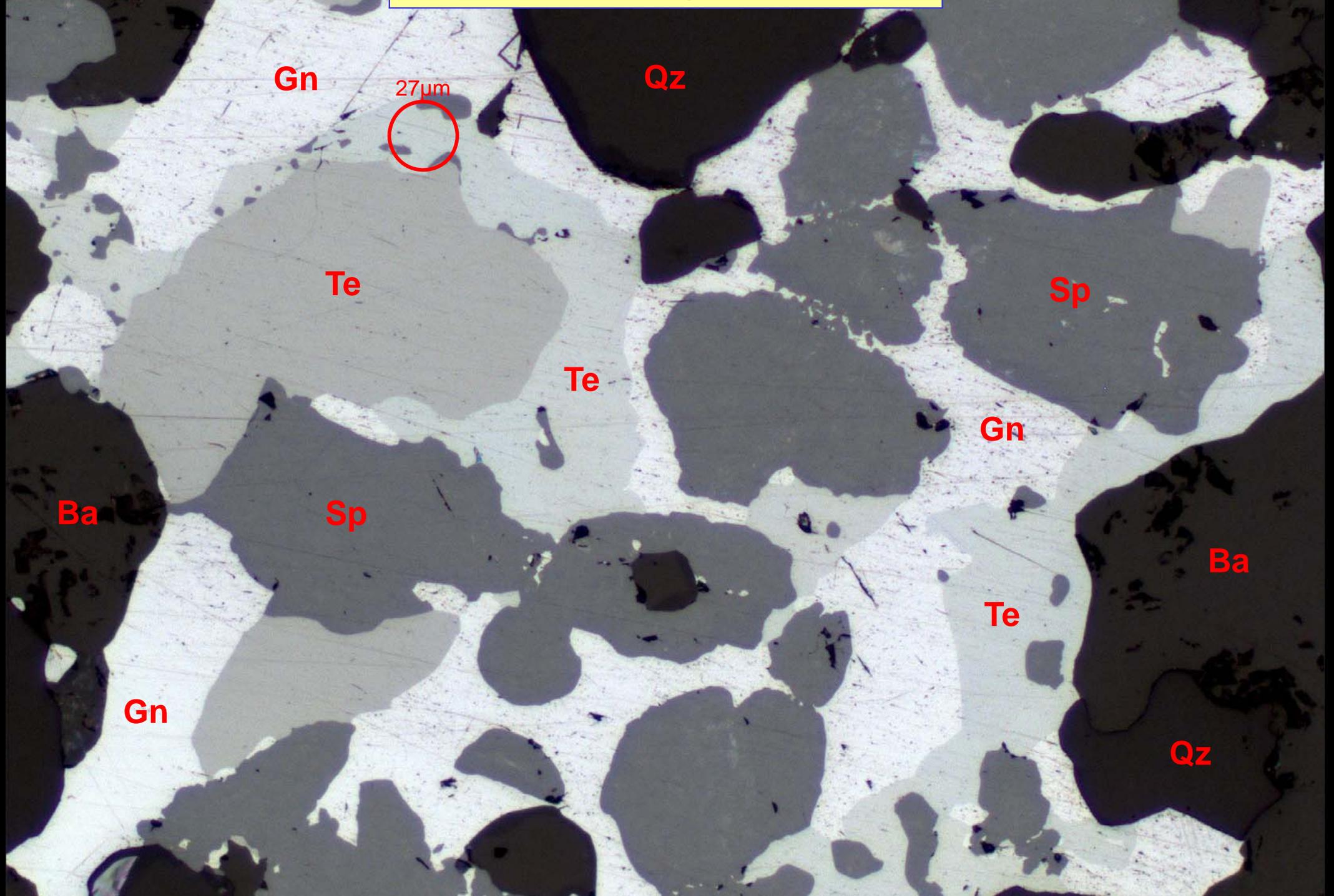


Image width 515µm

Reflected Light

DDH 411R-D1 1392748 I

Sample Scan

Offcut Assay

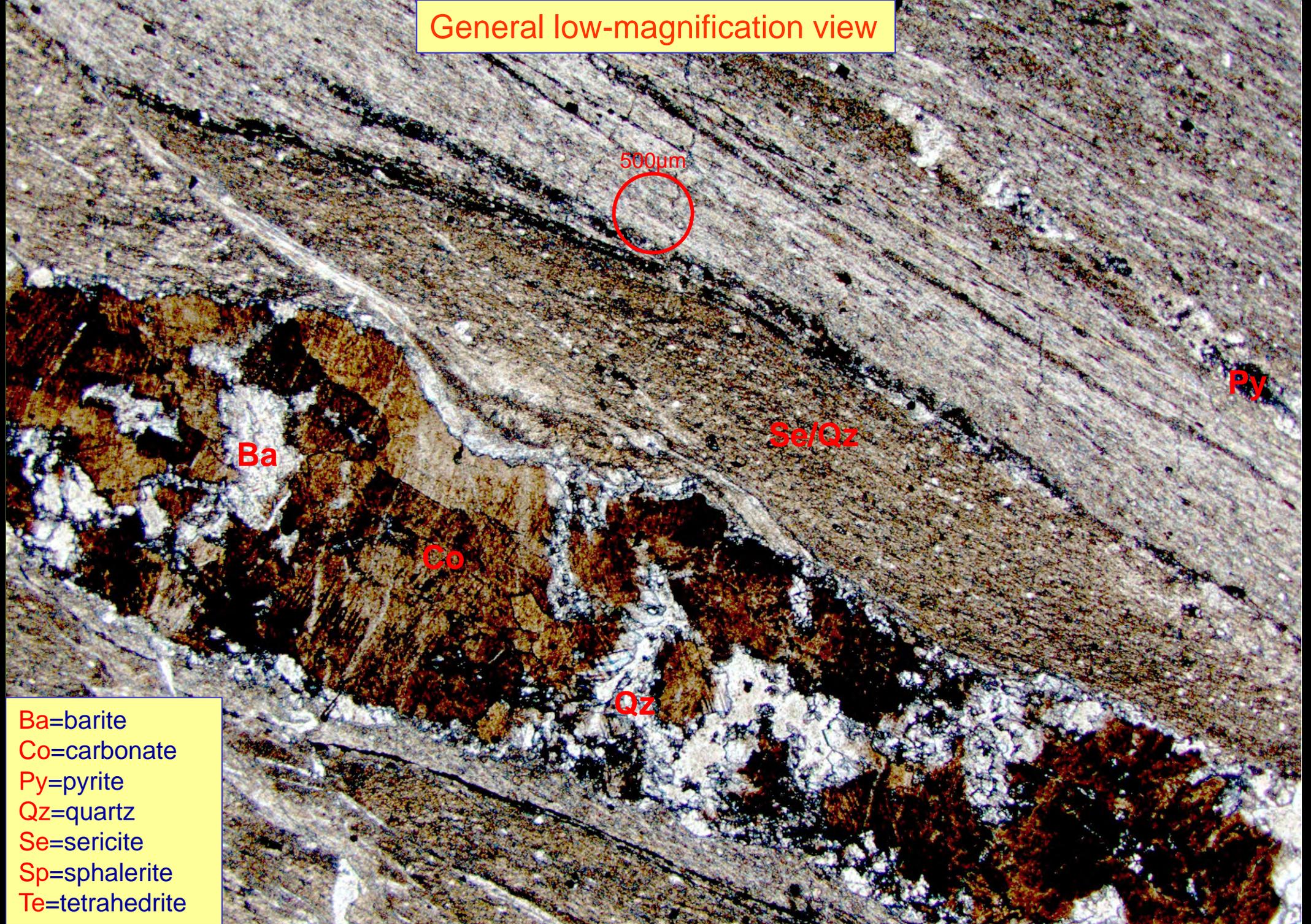
0.02%Cu, <0.01%Pb, 0.02%Zn, 1.00%Ba, <0.05%As, 0.76%Fe, 3ppmAg



Image width ~35mm

DDH 411R-D1 1392749

General low-magnification view



Ba=barite
Co=carbonate
Py=pyrite
Qz=quartz
Se=sericite
Sp=sphalerite
Te=tetrahedrite

Image width 8.2mm

Transmitted Light – uncrossed nicols

DDH411R-D1 1392749 a

Disseminated pyrite in sericite-quartz

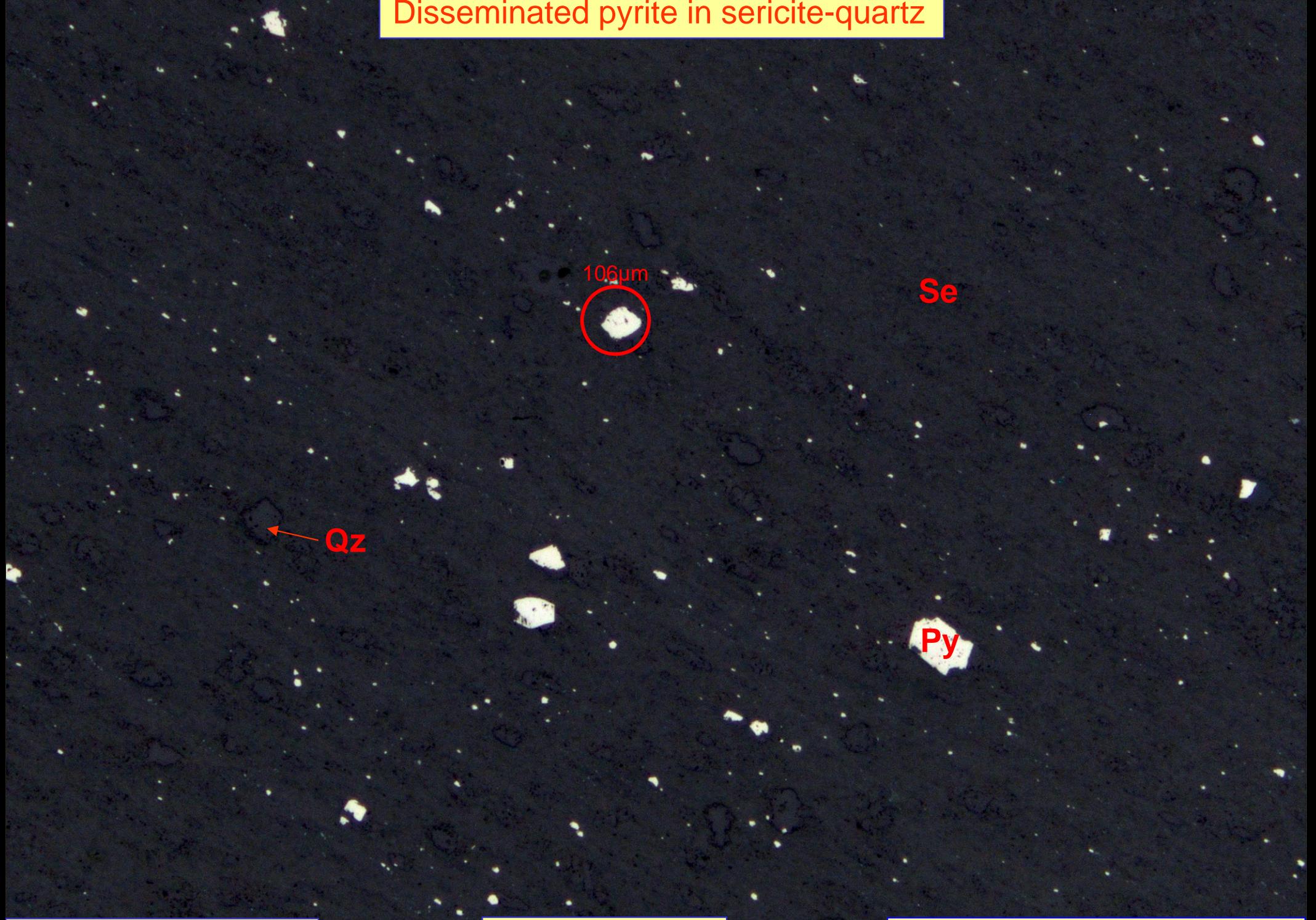


Image width 2.1mm

Reflected Light

DDH 411R-D1 1392749 b

Clustered pyrite on margin of sericite

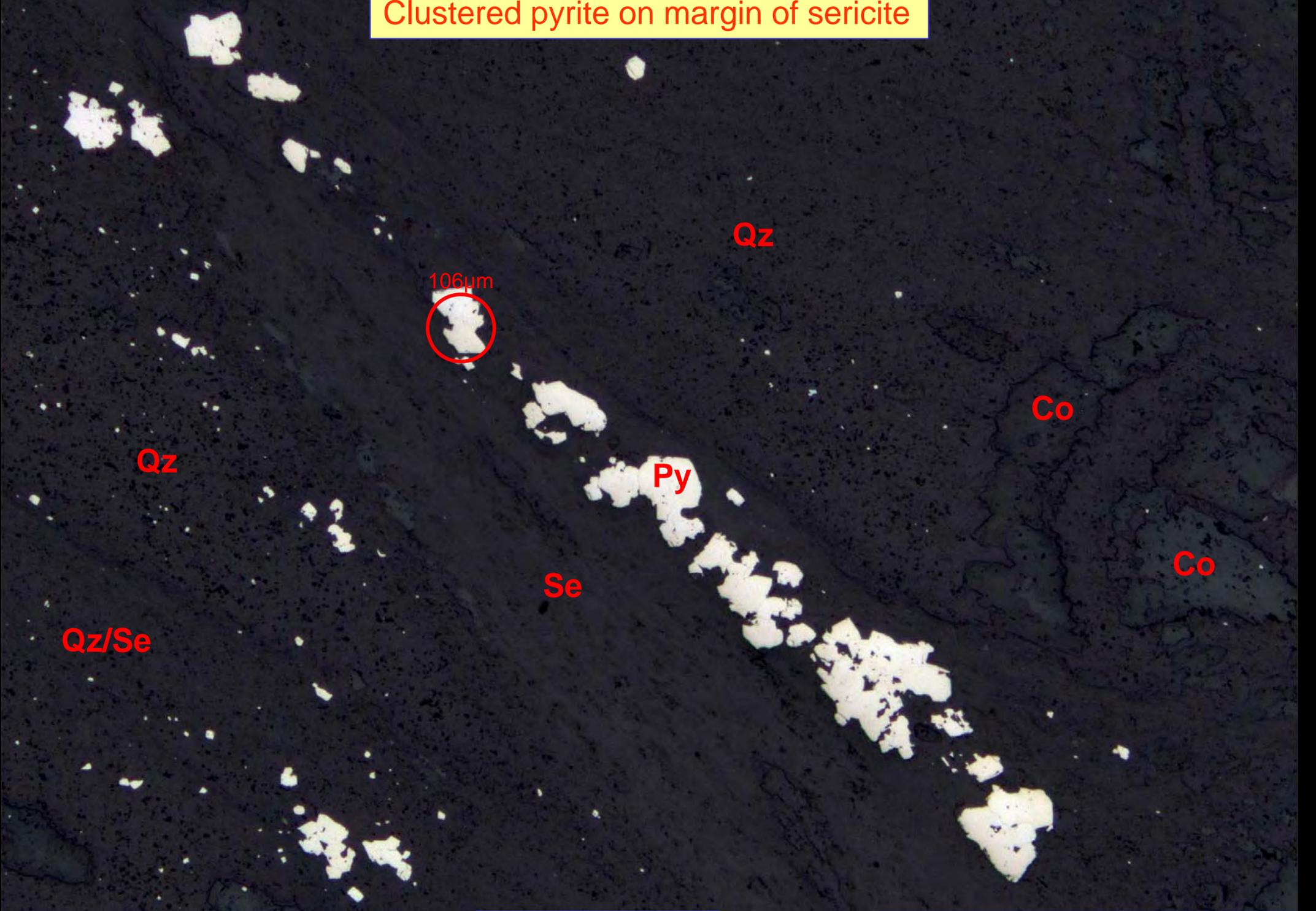


Image width 2.1mm

Reflected Light

DDH 411R-D1 1392749 c

Trace tetrahedrite and sphalerite in carbonate

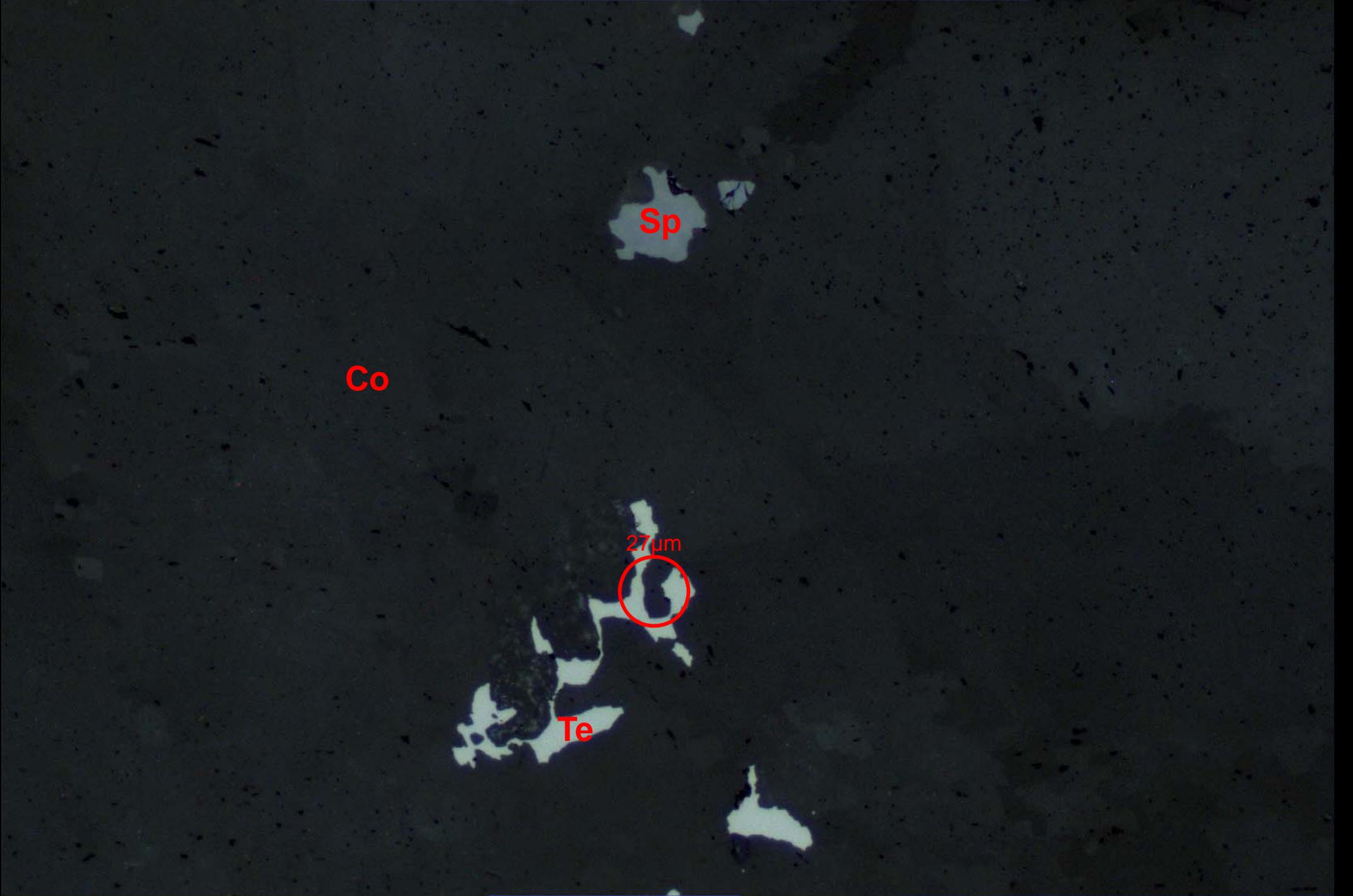


Image width 515µm

Reflected Light

DDH 411R-D1 1392749 d