



IDENTIFICATION OF A MAJOR FAULTED ZONE NORTH OF JAIPUR CITY, INDIA THROUGH EO-1 HYPERION DATA USING HYDROTHERMAL ALTERATION MINERALS

H. GOVIL & S. FAROOQ

**DEPARTMENT OF GEOLOGY, ALIGARH MUSLIM UNIVERSITY,
INDIA**

OVERVIEW

1.HYDROTHERMAL ALTERATION

2.STUDY AREA

3.ARGILIC ALTERATION

4.HYPERION PROCESSING

5.LAB ANALYSIS

6.MICROSCOPIC OBSERVATION

7.CONCLUSION

HYDROTHERMAL ALTERATION

- **HYDROTHERMAL ALTERATION IS A CHANGE IN MINERALOGY AS A RESULT OF INTERACTION OF THE ROCK WITH HOT AQUEOUS FLUIDS (HYDROTHERMAL FLUIDS).**
- **HYDROTHERMAL FLUIDS CAUSE ALTERATION OF ROCKS BY ADDING, REMOVING OR REDISTRIBUTING COMPONENTS.**
- **TEMPERATURES CAN RANGE FROM WEAKLY ELEVATED TO BOILING.**

STUDY AREA

25KM AWAY FROM JAIPUR

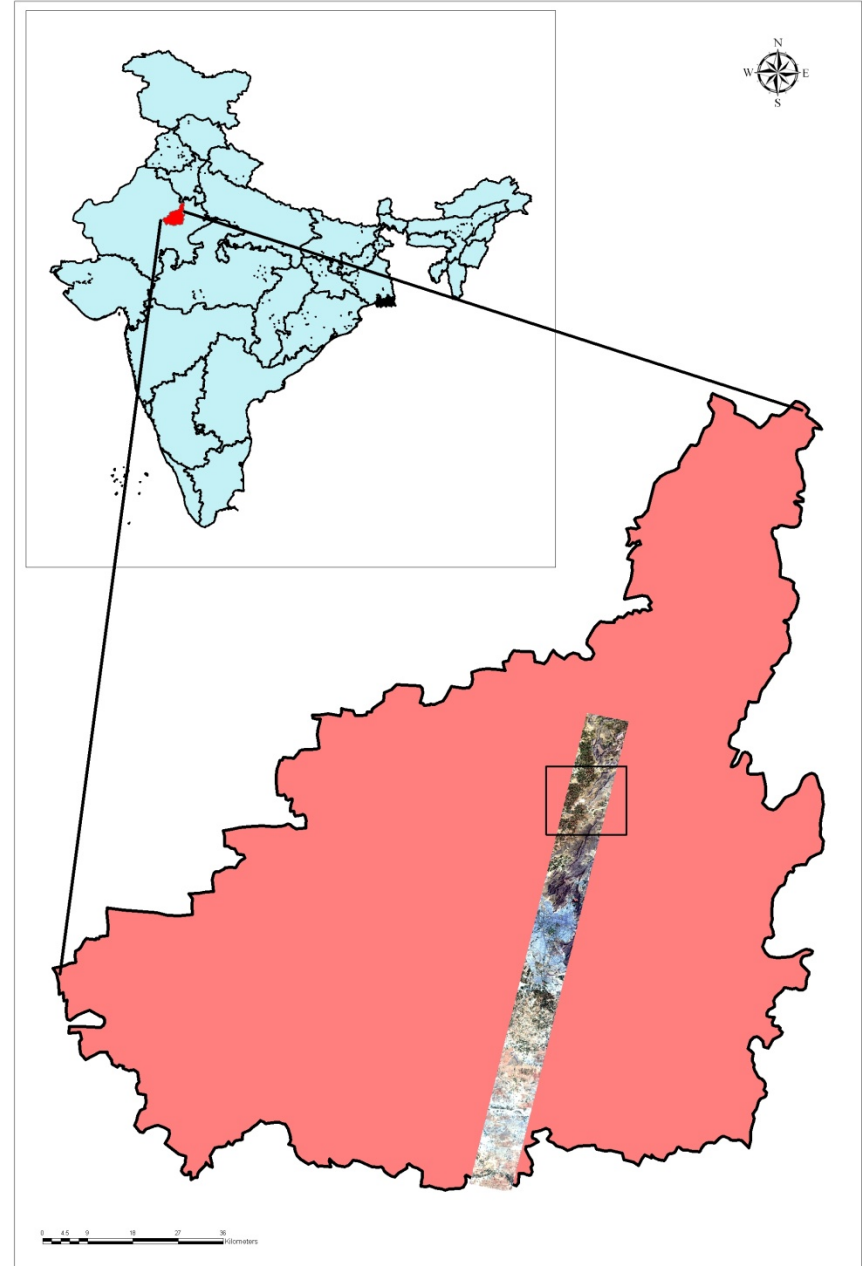
LOWER TO MIDDLE PROTEROZOIC

ALWAR GROUP OF DELHI SUPER
GROUP

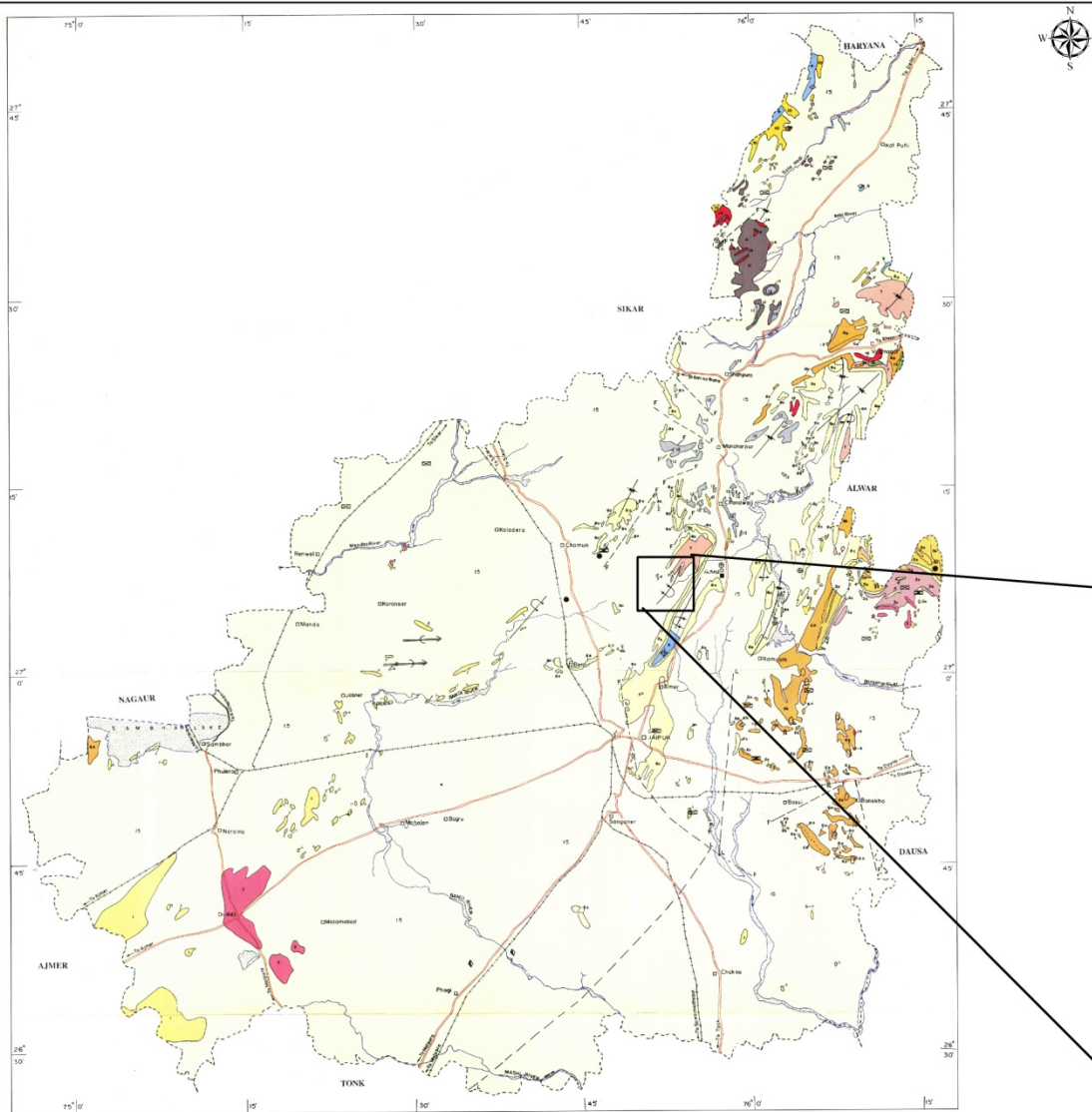
QUARTIZITE MINING AREA

SCHIST NEAR TO QUARTIZITE

Map of Study Area



GEOLOGICAL MAP OF JAIPUR



EXPLANATION

DISTRICT RESOURCE MAP

JAIPUR DISTRICT

Part 2

I GEOLOGY AND MINERALS

LITHOLOGY

1	Alkaline and calcareous sand
2	Coarse, argillaceous
3	Amphibolite, meta diorite
4	Grey quartzite, quartzite with scattered gneiss, calcareous gneiss and schist
5	Phyllon, schist and minor marble
6	Bucconated quartzite
7	Jaipur marble, amphibolite quartzite
8	Marine quartzite locally dolomitic
9	Schist, gneiss, Diagen, quartzite and minor marble
10	Crystalline and gritty quartzite with basic zones or gneiss to Quartzite
11	Quartzite, its Pelagitic quartzite with crystalline basic zones
12	Quartzite with thin bands of amphibolite
13	Jaipurian quartzite and conglomerate; to Dolomitic marble
14	Granite and gneiss
15	Quartzite with intercalated schist and phyllon

Alipahar Group

Alwar Group

Rajmahal Group

Rohilwara Group

Quaternary

Lateral to alluvial Deposits

Deltaic Deposits

Islands

NATURE AND CHARACTERISTICS

Hard, foliated rocks

Hard, foliated rocks

Hard, foliated rocks

Hard, foliated rocks

Hard, foliated rocks

Hard, foliated rocks

Hard, foliated rocks

Hard, foliated rocks

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GEOMORPHOLOGICAL CHARACTERISTICS

Draining capacity

Draining capacity

Draining capacity

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Productivity Characteristics

Productivity Characteristics

Productivity Characteristics

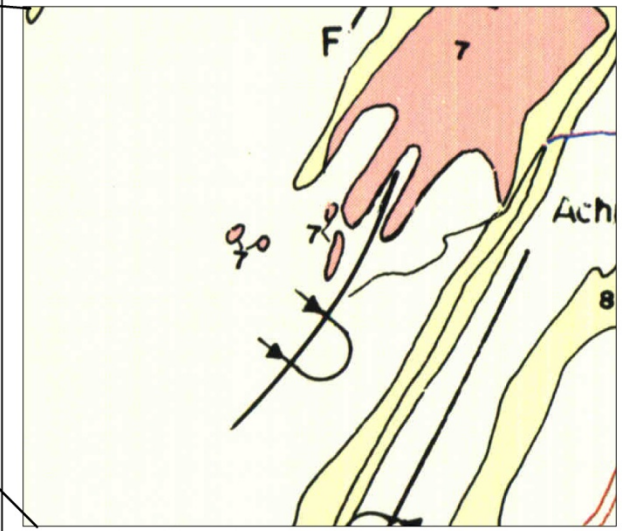
Productivity Characteristics

Productivity Characteristics

Productivity Characteristics

Productivity Characteristics

Productivity Characteristics



ARGILLIC ALTERATION

ADVANCED ARGILLIC - CHARACTERIZED BY THE CLAYS DICKITE, ALUNITE AND PYROPHYLLITE (ALL HYDRATED ALUMINUM SILICATES) AND QUARTZ. SERICITE MAY BE PRESENT AS WELL AS KAOLINITE AND TOURMALINE. ALTERATION INVOLVES THE EXTREME LEACHING OF CATIONS,

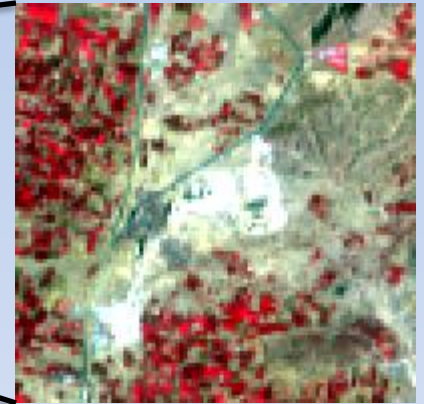
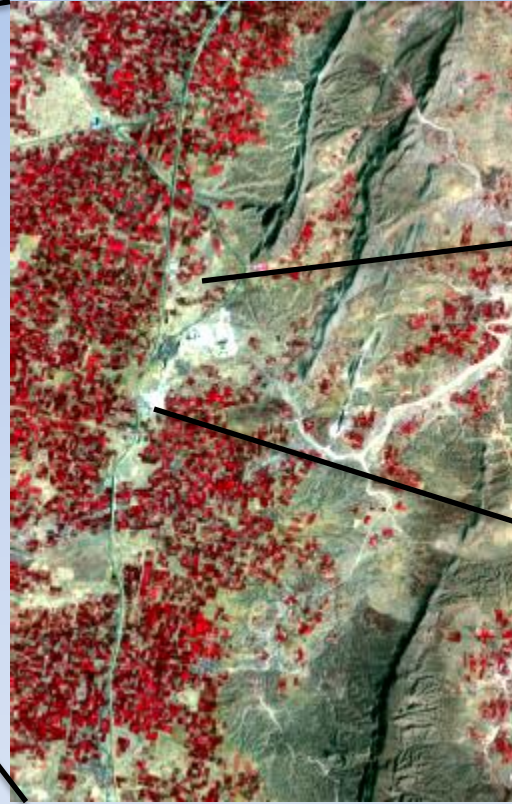
INTERMEDIATE ARGILLIC - CHARACTERIZED BY *KAOLINITE*, *SMECTITE*, *MONTMORILLONITE*. SOMEWHAT SIMILAR TO ADVANCED ARGILLIC ALTERATION, BUT WITH A LESSER DEGREE OF LEACHING OF CATIONS.

INTERNAL ZONING IS VERY COMMON IN THIS TYPE OF ALTERATION WHERE KAOLINITE BEING CLOSER TO THE PHYLIC ZONE AND MONTMORILLONITE CLAY OCCUR AT THE OUTER FRINGES.

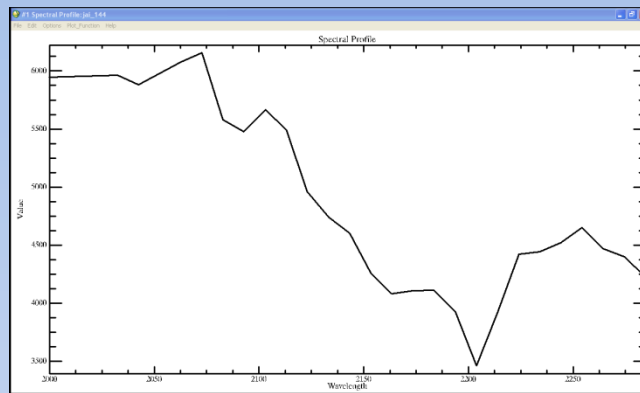
PRE-PROCESSING OF HYPERION

- SNR CALCULATION
- DESTRIPPING
- BAND SELECTION
- ATMOSPHERIC CORRECTION (FLAASH)

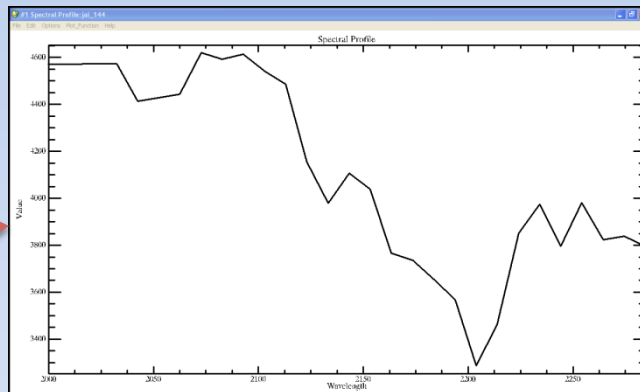
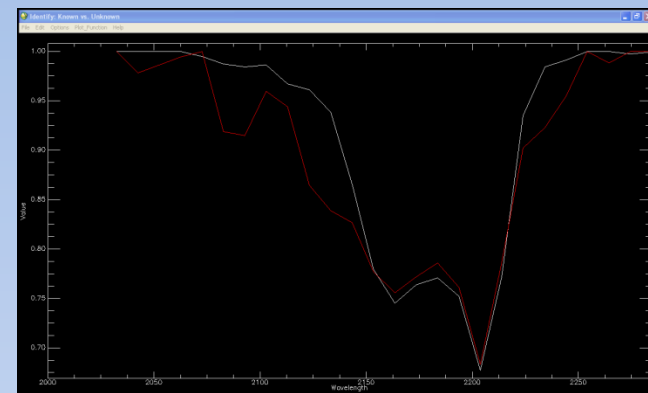
HYPERION IMAGE OF THE STUDY AREA



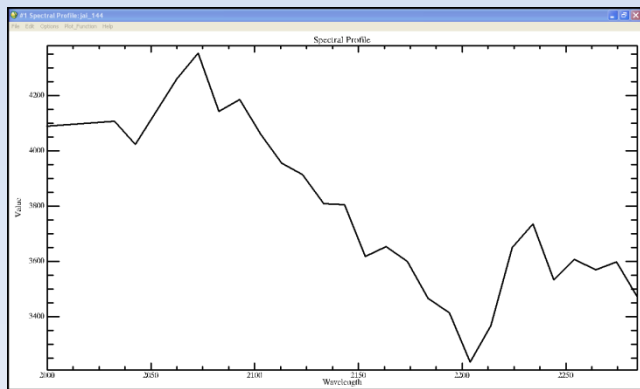
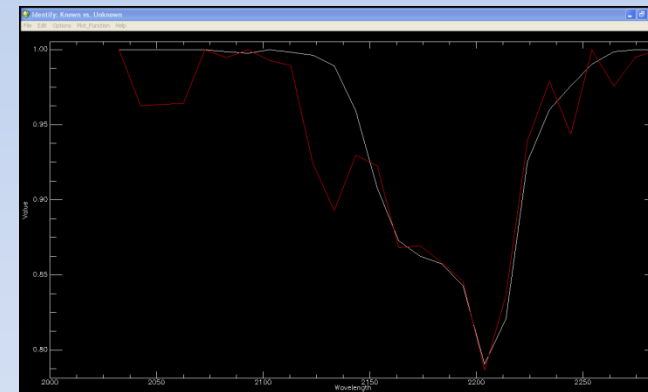
HYPERION IMAGE SPECTRA



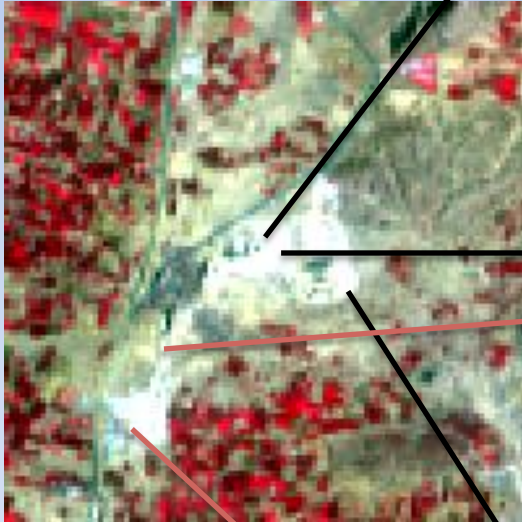
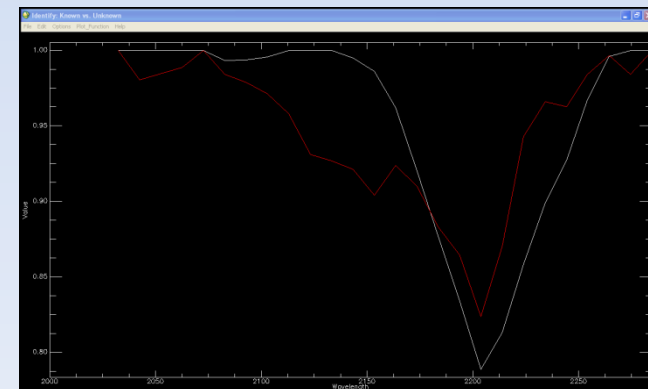
Kaolinite



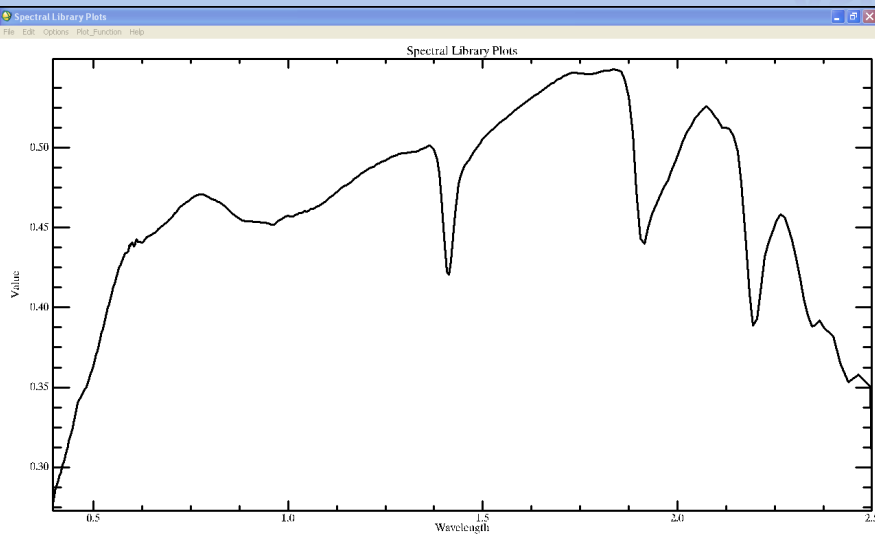
Kaolinite smectite



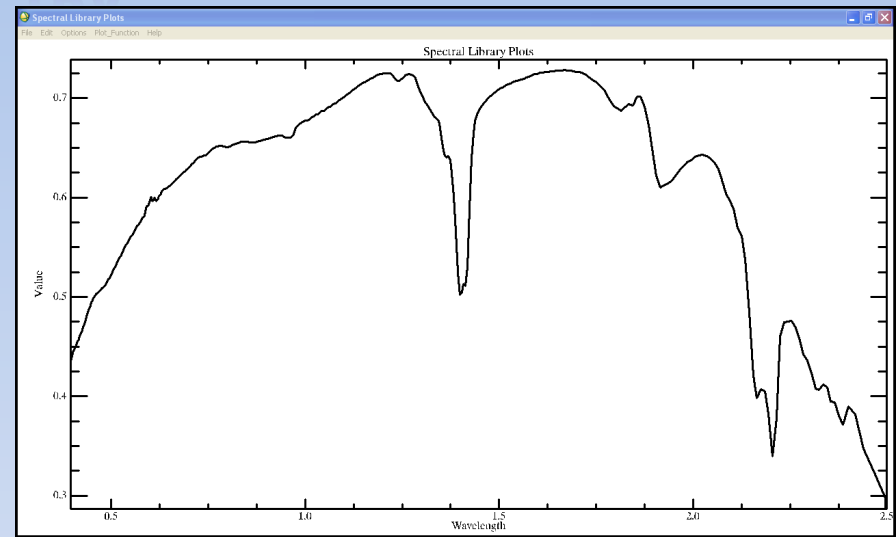
Montmorillonite



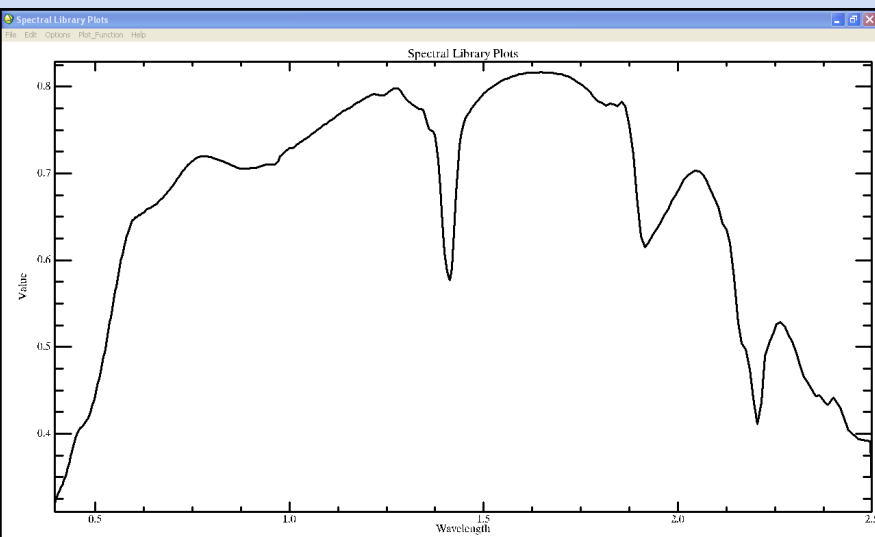
ASD SPECTRA



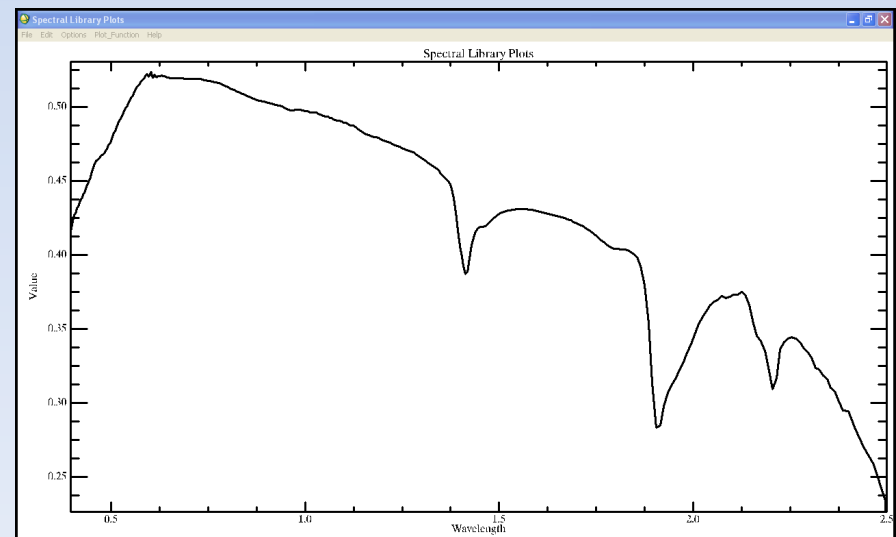
Iron rich Muscovite



Kaolinite

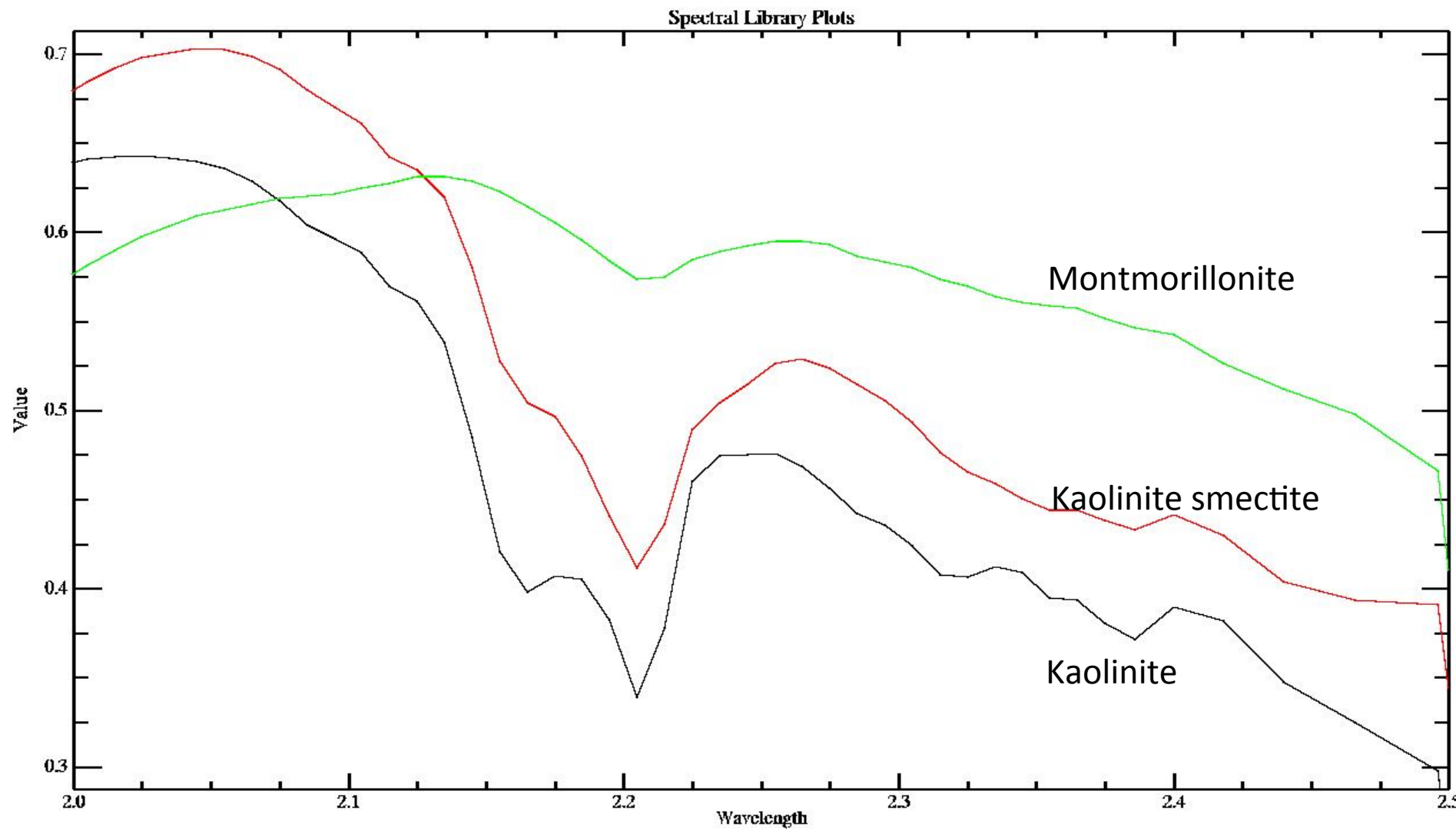


Kaolinite smectite



Montmorillonite

ASD SPECTRA



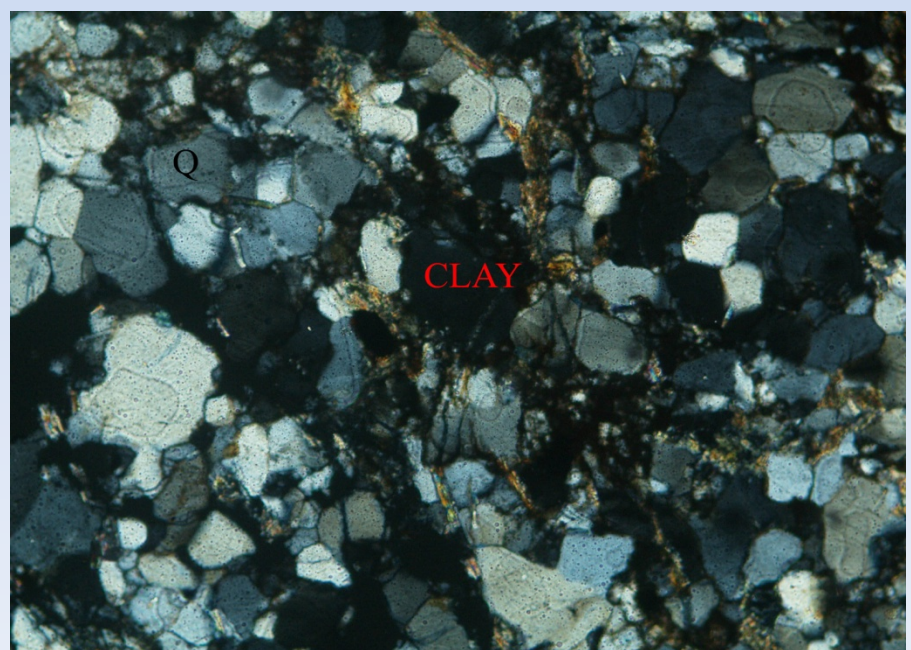
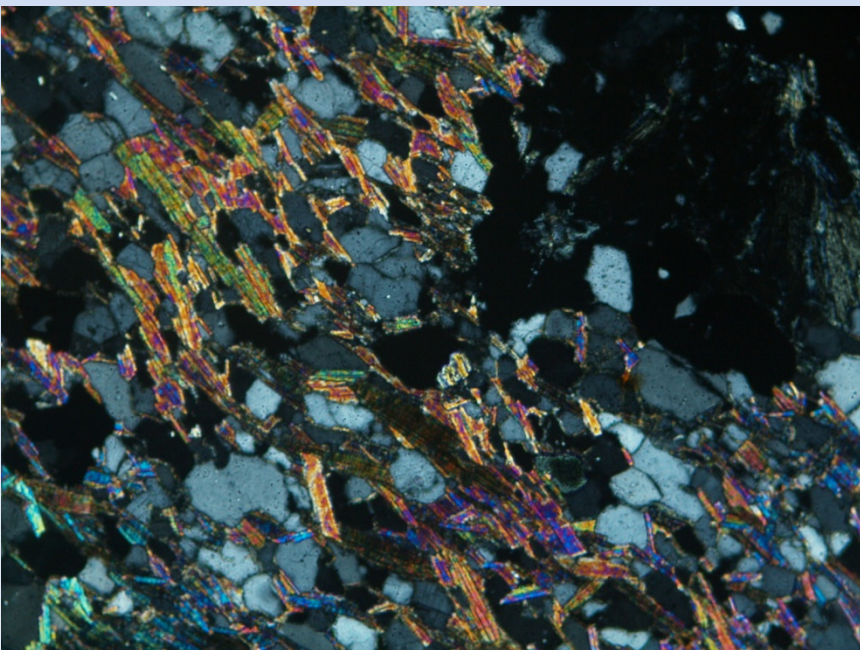
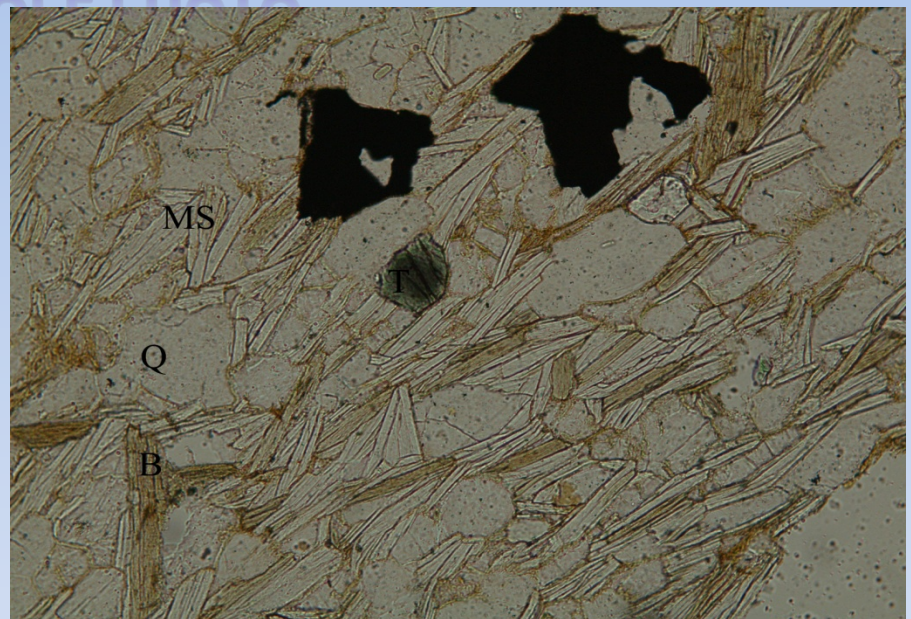
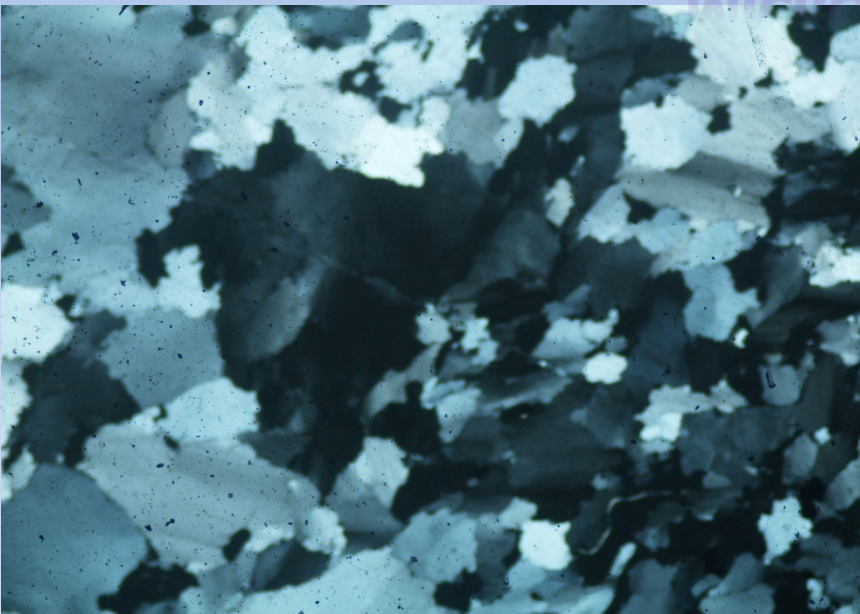
FIELD PHOTO

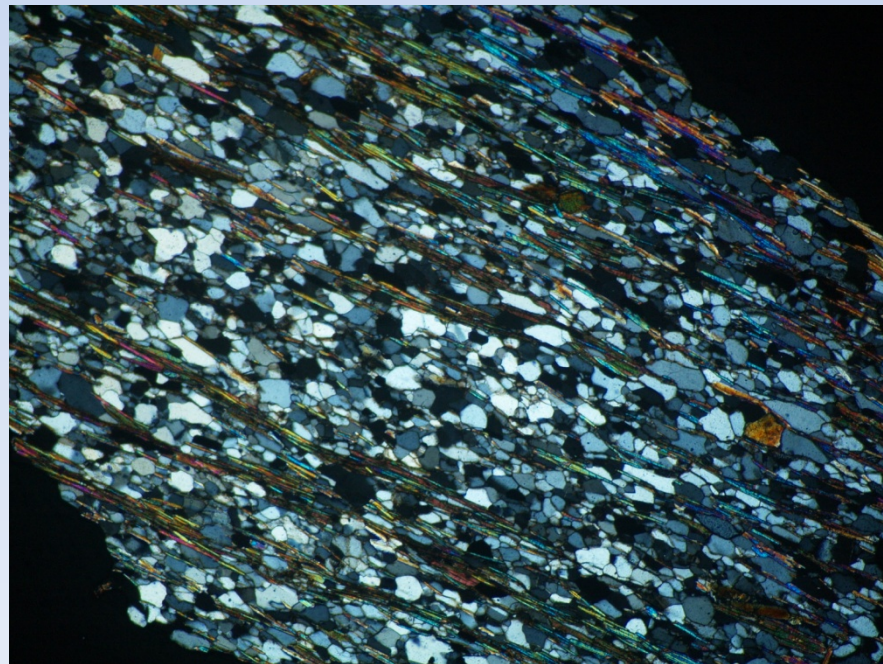
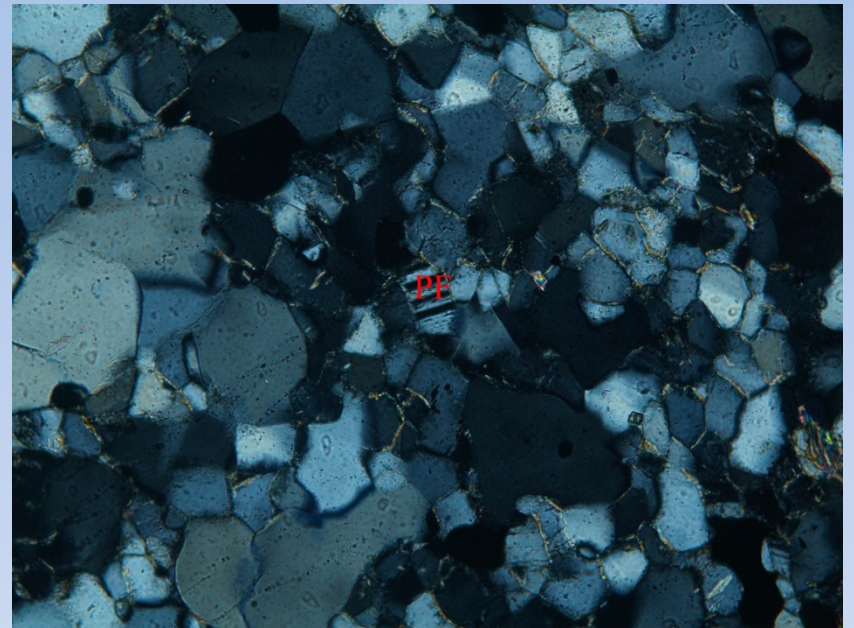
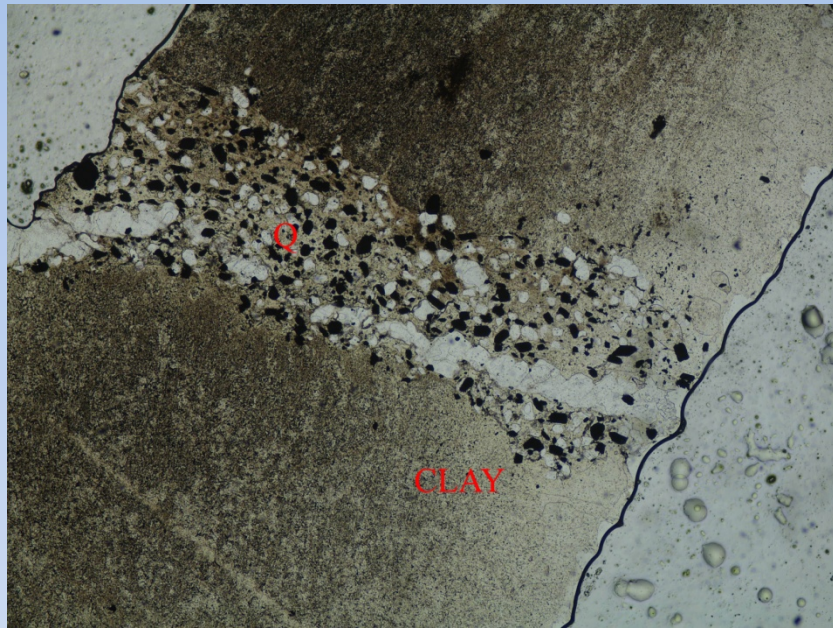






MICROSCOPE PHOTO





CONCLUSION

- 1. INTERMEDIATE ARGILLIC ZONING OF THE HYDROTHERMALLY ALTERED CLAY MINERALS CAN BE IDENTIFIED IN THE SWIR REGION OF THE HYPERION IMAGE**
- 2. SPECTROSCOPY CAN BE HELPFUL TO IDENTIFY THE SMALL CHANGES IN THE CHEMICAL COMPOSITION OF THE MINERALS BY ALTERATION**
- 3. MICROSCOPIC OBSERVATIONS OF THE ROCKS ARE ALSO GIVE GOOD INDICATION FOR ALTERATED AND STRESSED MINERALS**