RESULTS OF PETROGRAPHIC STUDY OF PARSADA-NAWAPARA-GURUR (G-4 STAGE) BLOCK, DISTRICT: BALOD, CHHATTISGARH

Sl. No	Sample No.	UTM		Texture	Mineral Composition			Description
		EASTING (m)	NORTHING (m)		Major >5%	Minor <5%->1%	Accessory <1%	
1	MPNG/P-01	539354	2290269	It is a medium grained rock showing granular texture.	Quartz	Ferruginous matter/ Opaques Lithic Fragments Feldspar	Tourmaline Glauconite Clay minerals	Quartz occurs as medium to coarse sand sized subrounded grains showing moderate sorting and packing. Minor recrystallization is noted in areas. Amorphous reddish ferruginous aggregates/ very fine opaque aggregates are seen present along intergranular spaces of quartz. Lithic fragments are noted as fine to medium subrounded grains, mostly quartzitic in nature. Feldspar occurs as fine subrounded grains altering to clay minerals. Tourmaline is seen present as fine prismatic grains in accessories. Glauconite occurs as fine pellets in areas. The specimen is a **quartz arenite.**
2	MPNG/P-02	550586	2285493	It is a reddish brown coloured very fine grained thinly laminated rock.	Clay minerals Ferruginous matter/ Opaques Glauconite	Quartz	….	The specimen is made up of very fine flaky aggregates of clay minerals showing parallel alignment. Ferruginous matter/ opaques occur as patches and patchy fillings aligned along the laminations. Glauconite occurs as fine disseminated subrounded pellets/ patches, often seen segregated in zones. Quartz is noted as fine to medium subrounded grains in dissemination. The specimen is a **glauconite rich ferruginous claystone.**
3	MPNG/P-03	550956	2284984	It is a thinly laminated fine grained rock showing	Quartz Glauconite	Ferruginous matter/ Opaques	Lithic fragments Sericite/	Quartz occurs as fine subrounded to subangular grains showing compact contacts. Grains are well sorted and tightly packed. Glauconite occurs as fine subrounded pellets/ patches in dissemination.

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		EASTING (m)	NORTHING (m)		Major >5%	Minor <5%->1%	Accessory <1%	
				granular texture.		Feldspar	Muscovite Tourmaline	Ferruginous matter/ opaques are present as very fine aggregates, anhedral patches and fillings. Feldspar occurs as fine subangular to subrounded grains, mostly microcline in nature. Lithic fragments are also noted in areas. Sericite/ muscovite occur as very fine disseminated flakes. Tourmaline is seen present as very fine prismatic grains in accessories. The specimen is a **glauconite rich quartz arenite.**
4	MPNG/P-04	551258	2285068	It is a medium grained rock showing granular texture.	Quartz	Feldspar Ferruginous matter/ Opaques Clay minerals	Lithic fragments Tourmaline Glauconite	Quartz occurs as medium to coarse sand sized subrounded grains showing moderate sorting and packing. Minor recrystallization is noted in areas. Feldspar occurs as fine to medium subrounded grains altering to clay minerals. Ferruginous matter/ opaques occur as very fine aggregates along intergranular spaces of quartz. Lithic fragments are seen present as fine subrounded grains, mostly quartzitic in nature. Tourmaline is noted as fine to very fine grains in accessories. Glauconite occurs as very fine to fine pellets, at places. The specimen is a **quartz arenite.**
5	MPNG/P-05	546655	2285390	It is a fine to medium grained rock showing granular texture.	Quartz	Ferruginous matter/ Opaques Feldspar	Lithic fragments Tourmaline Glauconite Clay	Quartz occurs as fine to medium subrounded grains showing compact contacts and minor recrystallization in areas. Ferruginous matter/ opaques occur as very fine aggregates along interstitial places of quartz grains. Feldspar and lithic fragments are seen present as fine to medium subrounded to subangular grains. Tourmaline is noted as fine to very fine prismatic grains in accessories. Glauconite occurs as fine to very fine

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		EASTING (m)	NORTHING (m)		Major >5%	Minor <5%->1%	Accessory <1%	
							minerals	subrounded grains. Dirty clayey patches are seen developing after feldspar alterations in areas. The specimen is a **quartz arenite.**
6	MPNG/P-06	533632	2287520	It is a fine to medium grained rock showing granular texture.	Quartz Glauconite	Ferruginous matter/ Opaques Lithic fragments	Tourmaline	Quartz occurs as fine to medium subrounded grains showing well sorting and tight packing. Glauconite occurs as fine to medium subrounded pellets/ patches in dissemination. Ferruginous matter/ opaques occur as very fine aggregates and fillings along intergranular spaces of quartz. Opaques are also seen present as medium to fine anhedral patches in pockets.Lithic fragments are present as fine to medium subrounded grains comprising very fine quartz aggregates. Tourmaline is noted as very fine prismatic grains in accessories. The specimen is a **glauconite rich quartz arenite.**
7	MPNG/P-07	546390	2285081	It is a coarse to medium grained rock showing granular texture.	Quartz	Lithic fragments Ferruginous matter/ Opaques	Tourmaline	Quartz occurs as granule to coarse sand sized well rounded grains. Grains are moderately sorted and tightly packed. Minor recrystallization in noted in areas. Lithic fragments are noted as well rounded grains, mostly cherty and quartzitic in nature. Ferruginous matter/ opaques occur as very fine aggregates, anhedral grains/ patches and as fillings. Tourmaline is seen present as fine subhedral prismatic grains in accessories. The specimen is a **sandy conglomerate.**

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		EASTING (m)	NORTHING (m)		Major >5%	Minor <5%->1%	Accessory <1%	
8	MPNG/P-08	545540	2285441	It is a medium to coarse grained rock showing granular texture.	Plagioclase Cummingtonite	Sericite Epidote Chlorite Sphene Opaques	Quartz	Plagioclase occurs as medium to coarse prismatic laths and turbid patches showing intense saussuritization. Cummingtonite is present as medium to coarse subhedral prismatic grains showing frequent twin planes. Sericite and epidote are seen present as very fine flaky/ granular aggregates, developing after plagioclase alterations. Chlorite occurs as patches replacing amphiboles from periphery. Sphene occurs as fine wedges and anhedral patches in dissemination. Opaques are present as very fine to fine anhedral to subhedral grains in dissemination and also occur as very fine relicts within sphene. Quartz is noted as fine to very fine anhedral grains in pockets. The specimen is an **altered amphibolite.**
9	MPNG/P-09	535723	2286994	It is a fine to medium grained rock showing granular texture.	Quartz	Glauconite Ferruginous matter/ Opaques	Lithic fragments Tourmaline Calcite	The specimen is mostly composed of quartz, occurring as fine to medium subrounded grains showing compact contacts. Glauconite is present as fine to medium subrounded grains. Ferruginous matter/ opaques occur as very fine aggregates and fillings along intergranular spaces of quartz. Opaques are also seen present as fine to very fine anhedral grains and specks. Lithic fragments are seen present as fine subrounded grains, mostly quartzitic in nature. Tourmaline is noted as fine subrounded grains in accessories. Calcite occurs as very fine fillings in accessories. The specimen is a **galuconite bearing quartz arenite.**

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10	MPNG/P-10	526206	2290127	It is a fine to medium grained rock showing granular texture.	Quartz	Opaques	Tourmaline	The specimen is made up of quartz, occurring as fine to medium subrounded grains showing compact contacts and minor recrystallization in areas. Opaques are present as fine to very fine grains, anhedral patches, very fine fillings and as inclusions of impurities within quartz. Tourmaline is noted as fine subhedral prismatic grains in accessories.The specimen is a **quartz arenite.**
11	MPN02/P1	24.10m (BH Depth)	24.20m (BH Depth)	It is a dark grey coloured very fine grained massive rock.	Quartz Feldspar Sericite/ Clay minerals Biotite	Carbonates Glauconite Muscovite Opaques	….	Quartz and feldspar are present as very fine silt sized clasts, where feldspar is seen altering to sericite/ clay minerals. Sericite/ clay mineralsoccur as cloudy patches comprising very fine flaky aggregates and mostly seen developing after feldspar alterations. Biotite and muscovite are present as very fine disseminated flakes showing parallel alignment. Carbonates are present as fine subrounded, lensoidal and elongated clasts. Glauconite occurs as fine subrounded grains in pockets. Opaques are noted as very fine specks in dissemination and also occur as fine fillings and patches.The specimen is a **glauconite bearing shale.**
12	MPN-03/P1	04.70 (BH Depth)	04.80 (BH Depth)	It is a fine grained rock showing granular texture.	Quartz Glauconite	Feldspar Opaques/ Ferruginous matter	Tourmaline Muscovite/ Sericite	Quartz occurs as fine subrounded to subangular grains showing compact contacts. Glauconite is present as fine subrounded pellets in dissemination. Feldspar occurs as fine subangular grains in association with quartz. Opaques/ ferruginous matter occur as fine disseminated grains/ patches and as very fine fillings along grain contacts. Tourmaline is noted as fine to very fine prismatic grains. Muscovite/ sericite are seen present as very fine to

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								fine flakes in accessories. The specimen is a **glauconite rich quartz arenite.**
13	MPN-04/P1	42.25 (BH Depth)	42.50 (BH Depth)	It is a medium to fine grained rock showing granular texture.	Quartz Feldspar (Microcline) Clay minerals	Opaques	Lithic fragments Muscovite Biotite Zircon	The specimen is made up of coarse sand to fine sand sized subrounded to subangular quartz and feldspar (mostly microcline) clasts floating over very fine clayey matrix. Opaques occur as fine to very fine disseminated grains. Lithic fragments occur as subrounded clasts, mostly quartzitic in nature. Muscovite and biotite are noted as fine to very fine flakes in association with clayey matrix in areas. Zircon is found present as very fine slender prismatic grains in accessories. The specimen is a **feldspathic wacke.**
14	MPN-05/P1	08.70 (BH Depth)	08.80 (BH Depth)	It is a dark grey coloured very fine to fine grained thinly laminated rock.	Quartz Feldspar Biotite Ferruginous matter	Clay minerals Glauconite Muscovite/ Sericite Opaques	….	Quartz and feldspar occur as very fine to fine silt sized to very fine sand sized subangular clasts. Biotite is present as very fine flakes and segregated patches showing parallel alignment. Ferruginous matter occur as reddish patches and fillings aligned along the lamination, often being intermixed with clay minerals and act as binding material. Very fine clay minerals are also seen developing after feldspar alterations.Glauconite is present as fine to very fine subrounded pellets in dissemination. Muscovite/ sericite are present as very fine to fine flakes showing parallel alignment. Opaques occur as fine to very fine grains and as fillings in association with

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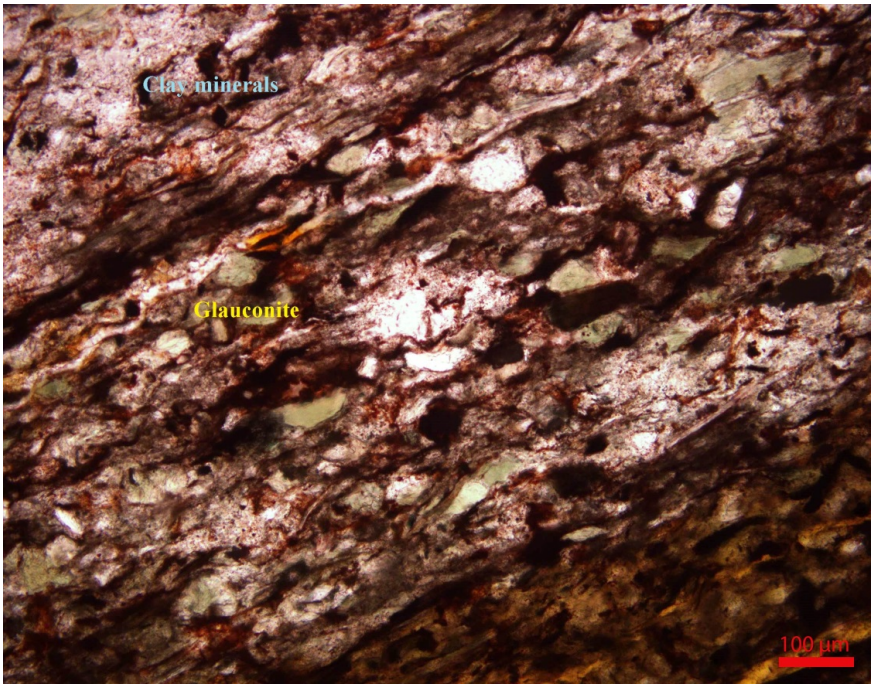
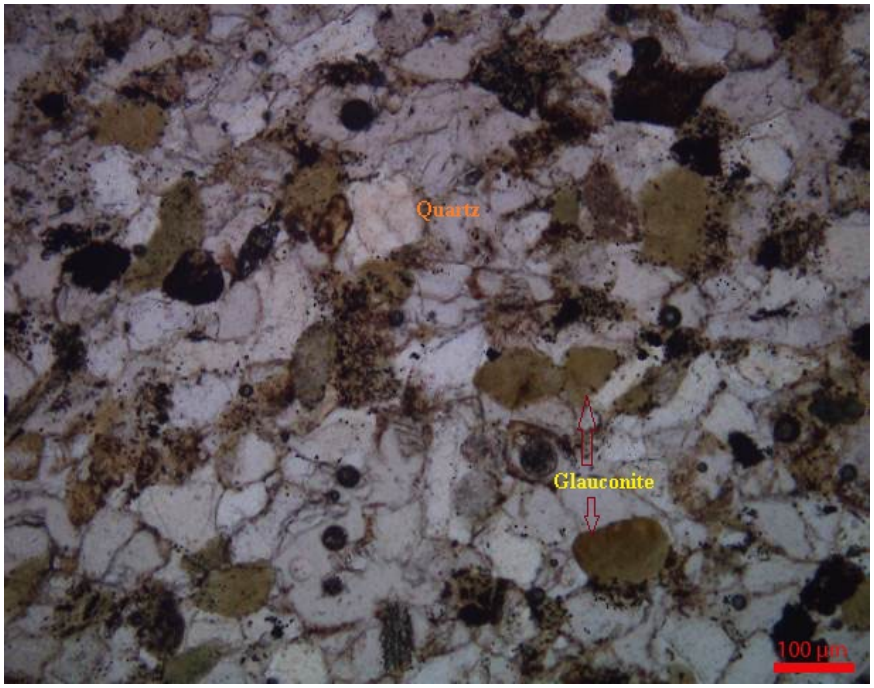
								ferruginous matter. The specimen is a **glauconite bearing shale.**



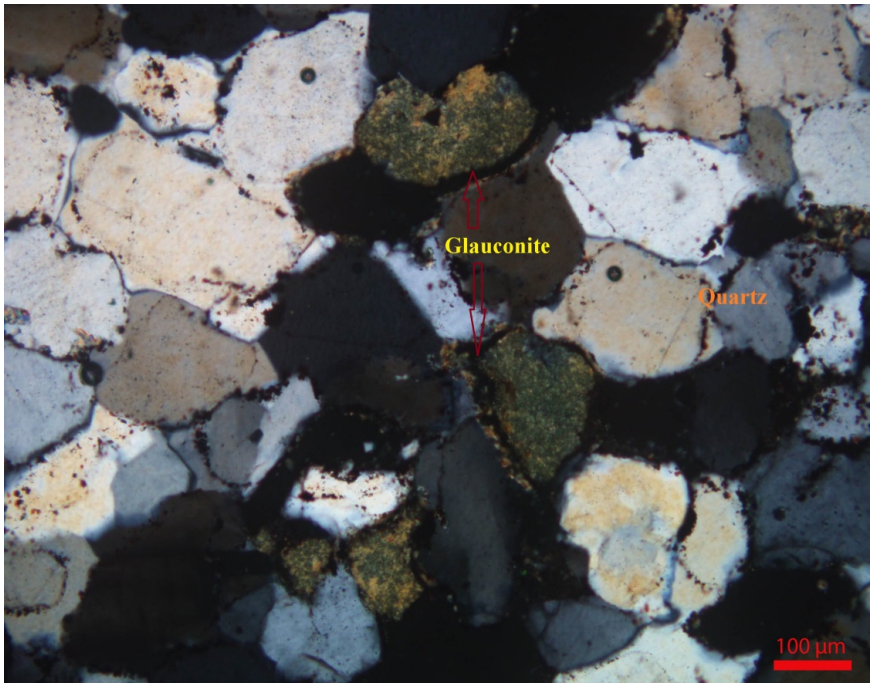
Pmg – 1: Photomicrograph showingpresence offine to medium subrounded pellets/ patches of glauconite in dissemination within ferruginous claystone as seen under plane polarized light.

Specimen No. : MPNG/P2 **Magnification :100X**



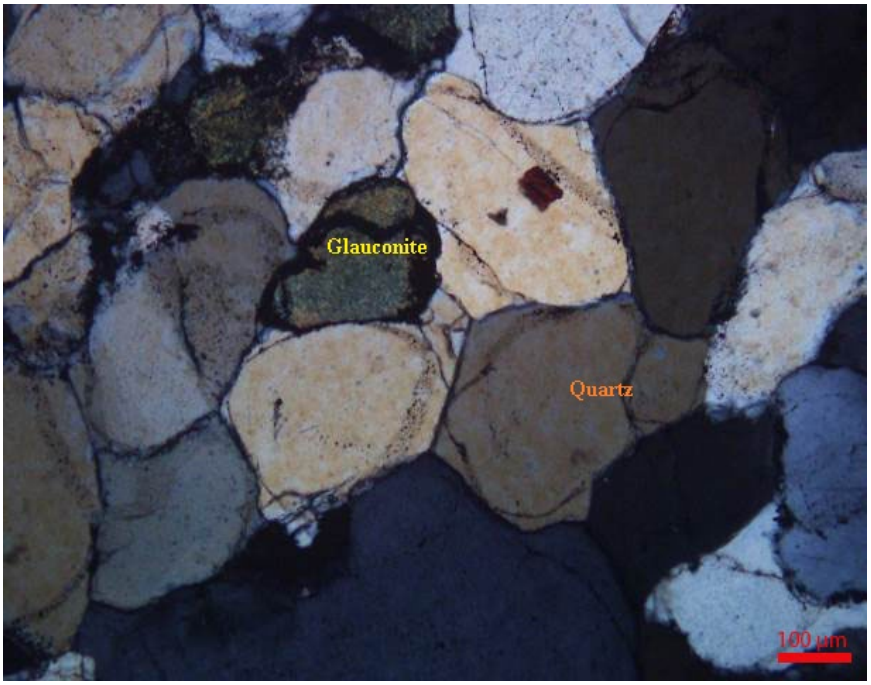
Pmg – 2: Photomicrograph showing presence offine to medium subrounded pellets/ patches of glauconite in dissemination within quartz areniteas seen under plane polarized light.

Specimen No. : MPNG/P3 **Magnification :100X**



Pmg – 3: Photomicrograph showing presence of fine to medium subrounded pellets of galuconite within quartz arenite as seen under crossed nicols.

Specimen No. : MPNG/P6 **Magnification : 100X**

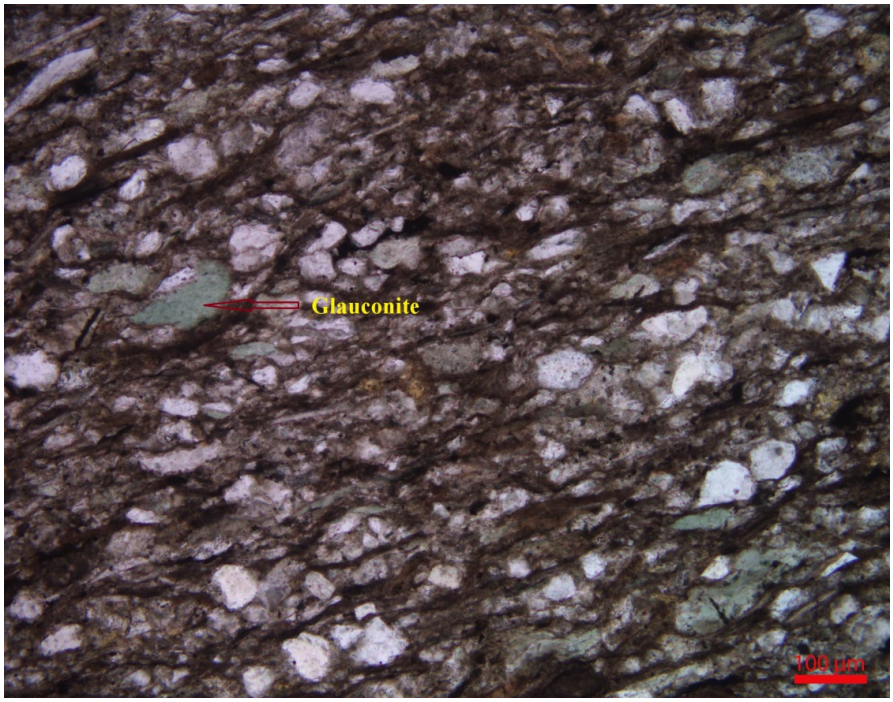


Pmg – 4: Photomicrograph showing presence of fine subrounded glauconite grains within quartz arenite as seen under crossed nicols.

Specimen No. : MPNG/P9 **Magnification : 100X**

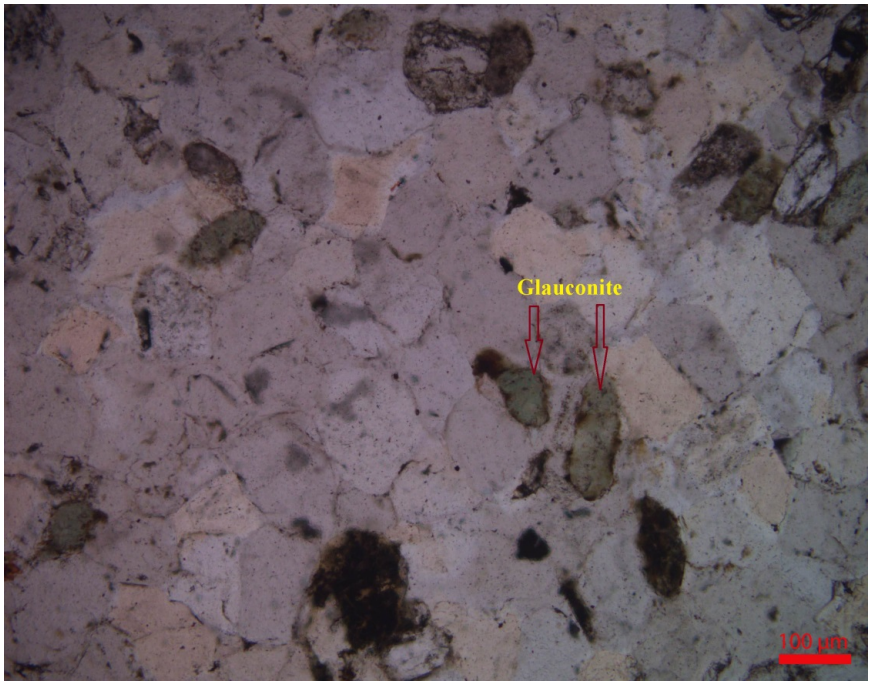
Pmg – 5: Photomicrograph showingpresence of saussuritised plagioclase and cummingtonite in amphiboliteas seen under crossed nicols.

Specimen No. : MPNG/P8 **Magnification :40X**



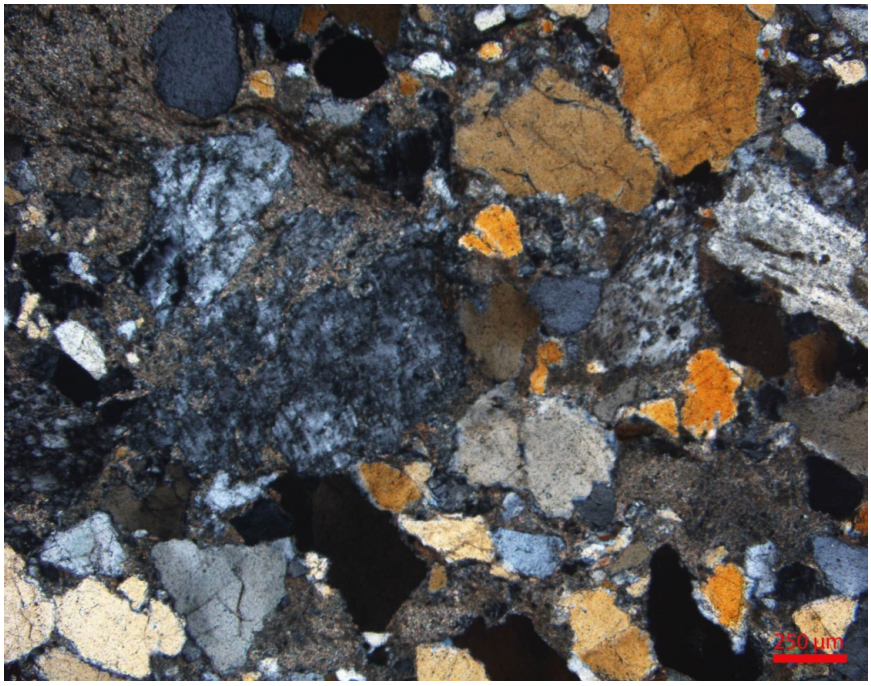
Pmg – 6: Photomicrograph showing presence of fine subrounded glauconite grains within shale as seen under plane polarized light.

Specimen No. : MPN02/P1 **Magnification :100X**



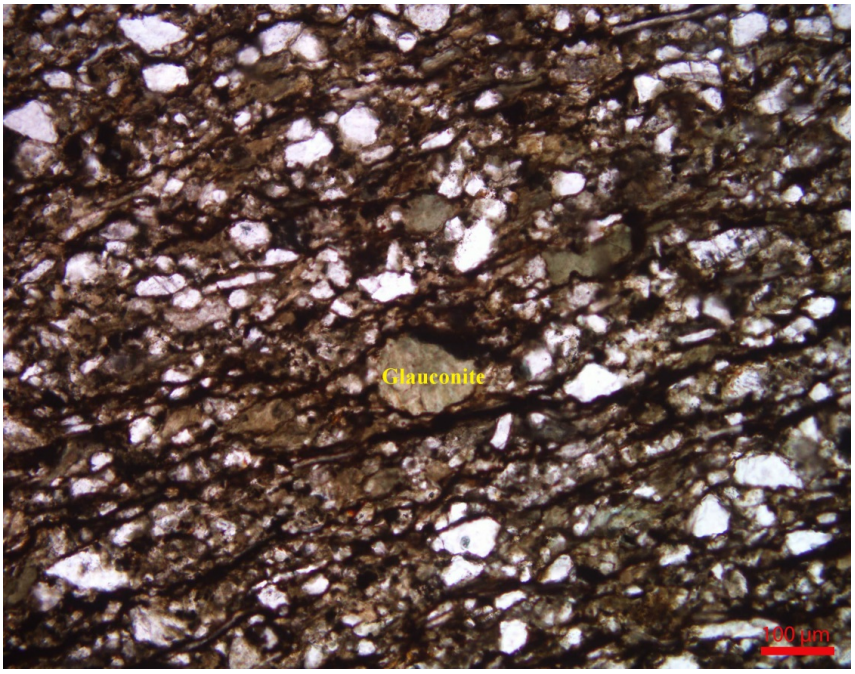
Pmg – 7: Photomicrograph showing presence of fine subrounded pellets of glauconite within quartz arenite as seen under plane polarized light.

Specimen No. : MPN-03/P1 **Magnification : 100X**



Pmg – 8: Photomicrograph showing quartz and feldspar clasts are floating over clayey matrix as seen under crossed nicols.

Specimen No. : MPN-04/P1 **Magnification :40X**



Pmg – 9: Photomicrograph showing presence of fine subrounded glauconite grains within shale as seen under plane polarized light.

Specimen No. : MPN-05/P1 **Magnification : 100X**