Petrographic Description

Identification

Description ID: SampleDescription2
Thin section ID: 1
Rock type: Sedimentary
Core number: 1
Box number: 0
Well/Outcrop name: Sample_Well
Top depth: 4000.0
Base depth: 4000.0
Unit/Age: Sample_Unit
Basin: Sample_Basin
Country: Brazil
State: XX
Place: Sample_Place
Institution: ENDEEPER
Petrographer: Petrographer
First edition date: Apr 24, 2006
Last edition date: Jun 1, 2011
Uses: Diagenetic, Provenance

Summary

Very coarse and poorly-sorted sandstone, with abundant large plutonic fragments and garnet grains, compacted (pseudomatrix), albite, illite and some calcite cement.

Microscopic textural features

Texture

Grain size range: Very fine sand (0.124 mm) to Pebble (48.0 mm)
Modal grain size: Very coarse sand (1.12 mm)
Gravel: 40.0%
Sand: 60.0%
Mud: 0.0%
Sorting: Very poorly sorted (2.5)
Sphericity: Low
Roundness: Sub-angular
Roundness modifier(s): Overgrowths, Pressure dissolution

Fabric

Orientation: Without orientation
Support: Grain-supported
Packing: Tight
Contacts:
Point contacts: Rare
Long contacts: Abundant
Concave-Convex contacts: Abundant

Sutured contacts: Common

Primary Composition

Quartz

30.0% Detrital quartz monocrystalline, As monomineralic grain;
7.67% Detrital quartz monocrystalline, In plutonic rock fragment;
2.67% Detrital quartz polycrystalline, As monomineralic grain;
1.33% Detrital quartz polycrystalline, In plutonic rock fragment;

Feldspar

8.67% Detrital perthite, As monomineralic grain, Altered;
6.67% Detrital microcline, As monomineralic grain;
6.33% Detrital orthoclase, As monomineralic grain;
4.33% Detrital K-feldspar, In plutonic rock fragment;
2.33% Detrital plagioclase, As monomineralic grain, Twinned;
1.0% Detrital plagioclase, As monomineralic grain, Untwinned;
0.33% Detrital plagioclase, In plutonic rock fragment;

Rock fragments

0.0%

Accessories

2.33% Biotite, As monomineralic grain, Compacted between other detritic grains.;
1.33% Garnet, As monomineralic grain;
0.67% Muscovite, In plutonic rock fragment;
0.33% Epidote, As monomineralic grain;

Intrabasinal grains

1.33% Argillaceous mud intraclast;

Matrix

0.0%

Diagenetic Composition

5.33% Albite, Microcrystalline, Intragranular replacive, Replacing <Primary-Constituent>, Detrital K-feldspar, As monomineralic grain;

1.33% Albite, Prismatic, Intragranular replacive, Replacing <Primary-Constituent>, Detrital plagioclase, As monomineralic grain;

1.33% Albite, Microcrystalline, Intragranular replacive, Replacing <Primary-Constituent>, Detrital plagioclase, As monomineralic grain;

0.33% Albite, Outgrowth, Intergranular discrete, Overgrowing <Primary-Constituent>, Detrital plagioclase;

0.33% Albite, Outgrowth, Intergranular discrete, Overgrowing <Primary-Constituent>, Detrital plagioclase, As monomineralic grain;

2.33% Clay pseudomatrix, Microcrystalline, Intergranular pore-filling, Compacted from <Primary-Constituent>, Argillaceous mud intraclast, In intrabasinal fragment;

1.33% Illite, Fibrous, Intergranular replacive, Replacing <Diagenetic-Constituent>, Clay pseudomatrix, Intergranular pore-filling;

1.0% Illite, Fibrous, Intragranular replacive, Replacing <Primary-Constituent>, Mud intraclast;

0.67% Illite, Fibrous, Intragranular pore-filling, Within intragranular porosity in <Primary-Constituent>, Mud intraclast;

0.67% Illite, Fibrous, Intergranular pore-filling, Within <pore>, Clay pseudomatrix;

0.33% Illite, Fibrous, Intergranular discontinuous pore-lining, Covering <Primary-Constituent>, Detrital plagioclase, As monomineralic grain;

0.33% Illite, Fibrous, Intergranular pore-filling, Within <pore>, Intergranular pore;

0.33% Quartz, Overgrowth, Intergranular discontinuous pore-lining, Covering <Primary-Constituent>, Detrital quartz monocrystalline, As monomineralic grain;

0.33% Diagenetic titanium mineral, Microcrystalline, Intragranular pore-filling, Within intragranular porosity in <Primary-Constituent>, Mud intraclast;

0.33% Diagenetic titanium mineral, Microcrystalline, Intragranular replacive, Replacing <Primary-Constituent>, Biotite, As monomineralic grain;

0.33% Diagenetic titanium mineral, Coarsely-crystalline, Intergranular pore-filling, Within <pore>, Intergranular pore;

0.33% Calcite, Small rhomb, Intragranular replacive, Replacing <Primary-Constituent>, Biotite, As monomineralic grain;

0.33% Siderite, Small rhomb, Intragranular replacive, Replacing <Primary-Constituent>, Biotite, As monomineralic grain;

0.33% Calcite, Poikilotopic, Intragranular replacive, Replacing <Primary-Constituent>, Primary constituent undifferentiated, As monomineralic grain;

0.33% Dolomite, Small rhomb, Intergranular replacive, Replacing <Diagenetic-Constituent>, Clay pseudomatrix;

Porosity

2.0% Intragranular pore, Framework, Dissolution of <Primary-Constituent>, Detrital K-feldspar, As monomineralic grain;

1.33% Intergranular pore, Interstitial, Primary, Intergranular pore;

0.67% Intragranular pore, Framework, Dissolution of <Primary-Constituent>, Mud intraclast;

0.33% Intragranular pore, Framework, Within <Primary-Constituent>, Biotite, As monomineralic grain;

0.33% Intergranular pore, Interstitial, Dissolution of <Diagenetic-Constituent>, Clay pseudomatrix;

Additional Analysis

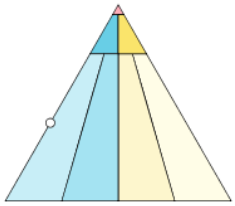
Petrophysics

Horizontal petrophysical porosity (%): 9.99

Horizontal permeability (mD): 0.322

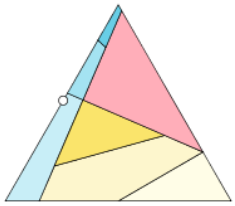
Classification

Folk Original: Arkose
Qo Folk: 39.84632
Fo Folk: 60.15368
Lo Folk: 0.0



Provenance Interpretation

Dickinson I Original: Basement uplift - continental block
Qt Dickinson I Original: 51.242004
F Dickinson I Original: 48.75799
L Dickinson I Original: 0.0



Diagenetic Environment Interpretation

Interpreted Diagenetic Environments

Siliciclastic environment of deep burial diagenesis (deep mesodiagenesis)

Total

Volumes

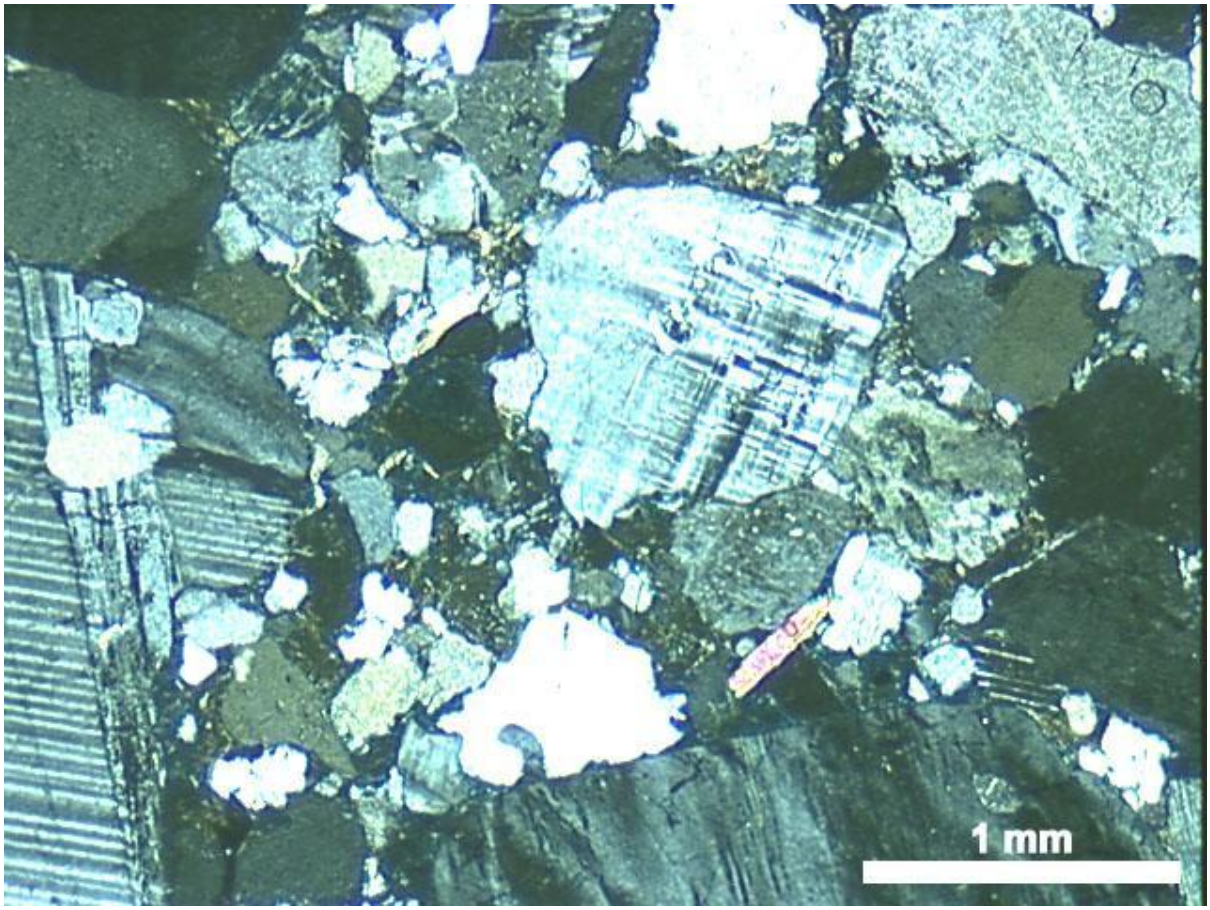
Framework	91.7
Intergranular	8.3
Cement	2.65
Matrix	0.0
Porosity	4.66
Microporosity	5.33
Total diagenetic constituents	17.95
Rigid grains	72.99
Ductile grains	4.33

Extrabasinal constituents

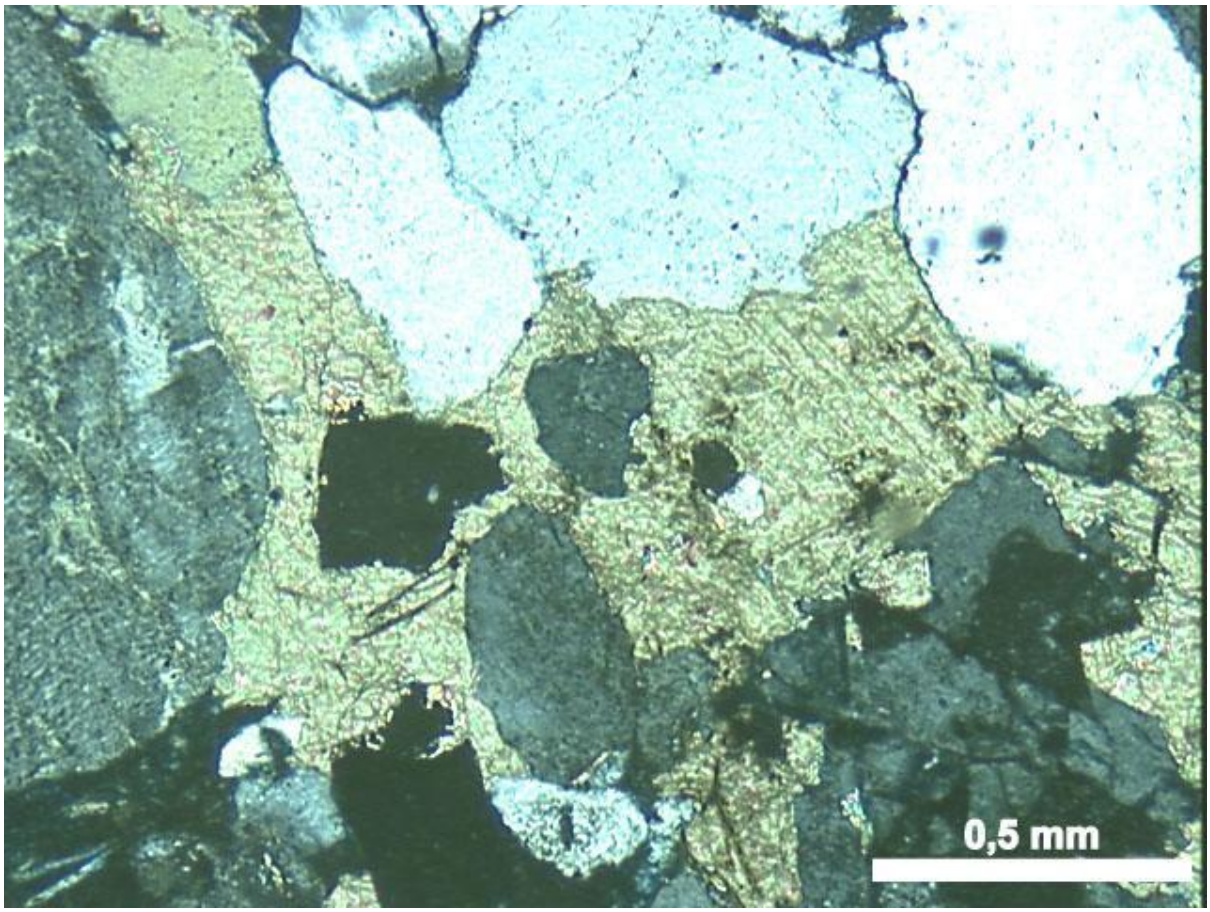
Total extrabasinal constituents	76.66
Extrabasinal grains	76.66

Detrital quartz	32.67
Detrital feldspar	25.0
Plutonic rock fragments	14.33
Volcanic rock fragments	0.0
Sedimentary rock fragments	0.0
Carbonate rock fragments	0.0
Metamorphic rock fragments	0.0
Detrital matrix	0.0
Intrabasinal constituents	
Total intrabasinal constituents	3.33
Present primary carbonate constituents	0.0
Original primary carbonate constituents	0.0
Intrabasinal grains	1.33
Present carbonate allochems	0.0
Original carbonate allochems	0.0
Primary proportion of original carbonate allochems	0.0
Carbonate bioclasts	0.0
Carbonate intraclasts	0.0
Carbonate ooids	0.0
Carbonate peloids/pellets	0.0
Original bioconstructers	0.0
Present carbonate bioconstructors	0.0
Original carbonate bioconstructors	0.0
Primary proportion of original carbonate bioconstructors	0.0
Present carbonate matrix	0.0
Original carbonate matrix	0.0
Primary proportion of original carbonate matrix	0.0
Carbonate cement	0.0
Present intrabasinal non-carbonate grains	1.33
Original intrabasinal non-carbonate grains	3.33
Dolomite/Calcite ratio	0.5

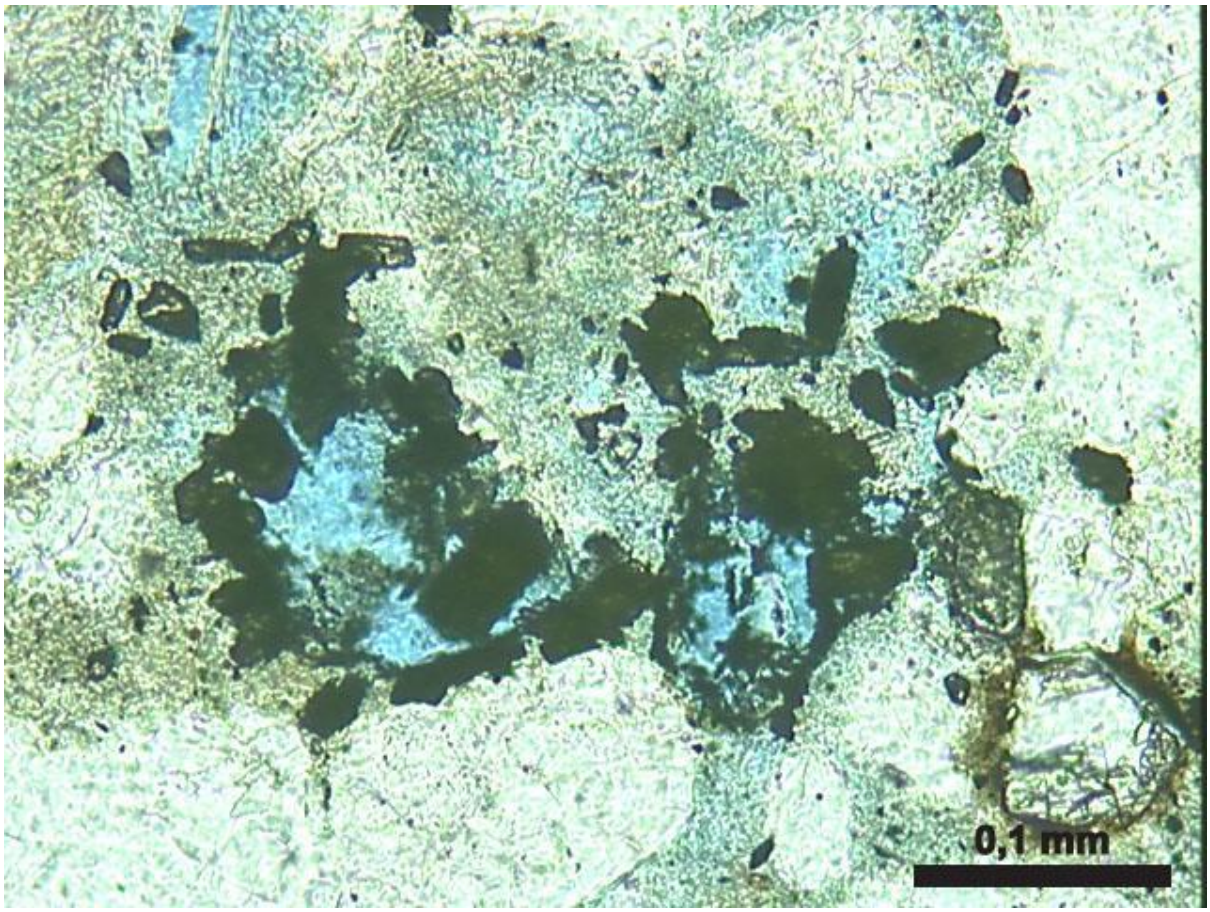
Images



Description: Image1
Purposes: General thin section view



Description: Image2
Purposes: General thin section view



Description: Image3
Purposes: General thin section view