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IAMGOLD ROSEBEL GOLD MINES N.V.

Overman – an exceptional gold deposit in the Rosebel mining area, Suriname

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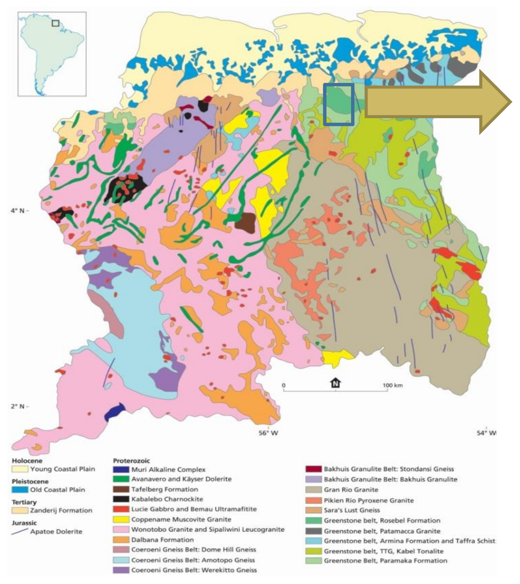
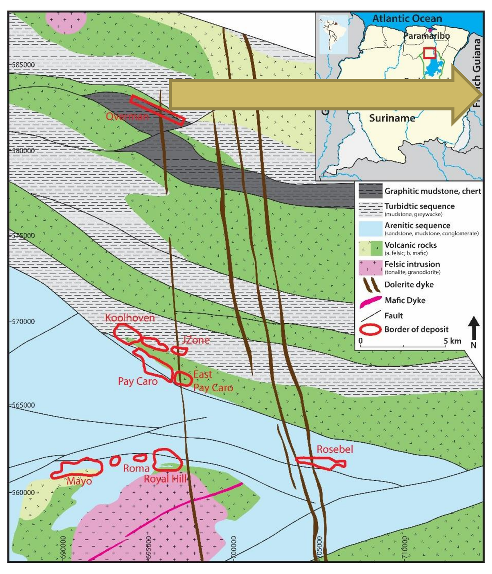
Geological Setting

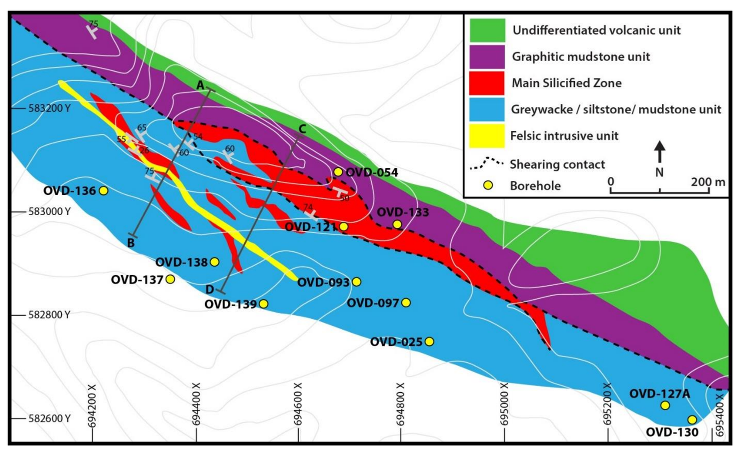
- The Overman Gold Deposit, a prospective area in the Paleoproterozoic Marowijne Greenstone Belt, is located 16 km north of the currently operating Rosebel mines
- The Rosebel Gold District currently comprises eight identified deposits and several prospective areas
- Gold mineralization in the Rosebel Gold District is hosted in low-medium grade metamorphic rocks, including turbiditic sediments, conglomerates, lavas and intrusions



Geological map of Suriname after Kroonenberg et al. (2016)



Geological map of the Rosebel Gold District illustrating the eight identified gold deposits and the Overman Gold Deposit after Daoust et al. (2011).



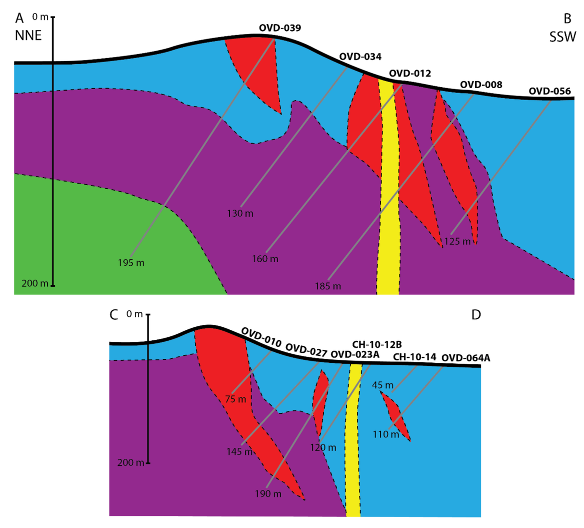
Geological interpretation map of the Overman Gold deposit after Alimoenadi (2013), Daoust (2013) and Schreefel (in prep.)

Lithology

- Main south-dipping silica body
- Graphitic mudstone
- Greywacke-siltstone
- Felsic intrusive

All rocks show low-grade meta-morphism

Sharp stratigraphic contact between silica body and graphitic mudstone



Interpretation profiles indicating the lateral and vertical discontinuity of the silica lenses after Alimoenadi (2013), Daoust (2013) and Schreefel (in prep.).

Geochemistry

Pre-silicification precursors from bulk-rock data

- 24 drill core samples from main lithological units were analyzed for major and trace elements by XRF, ICP-AES and ICP-MS.
- Geochemical and petrographic results identify 5 distinct rock types.
- Original rocks, prior to silicification were probably heterogeneous and mainly of (meta-)sedimentary origin.
- Trace-element signatures of lithological groups, least affected by silicification, show strong resemblance to meta-sediments of the northern deposits of the Rosebel district (J-Zone and Koolhoven) and the Rosebel deposit in the Central trend.

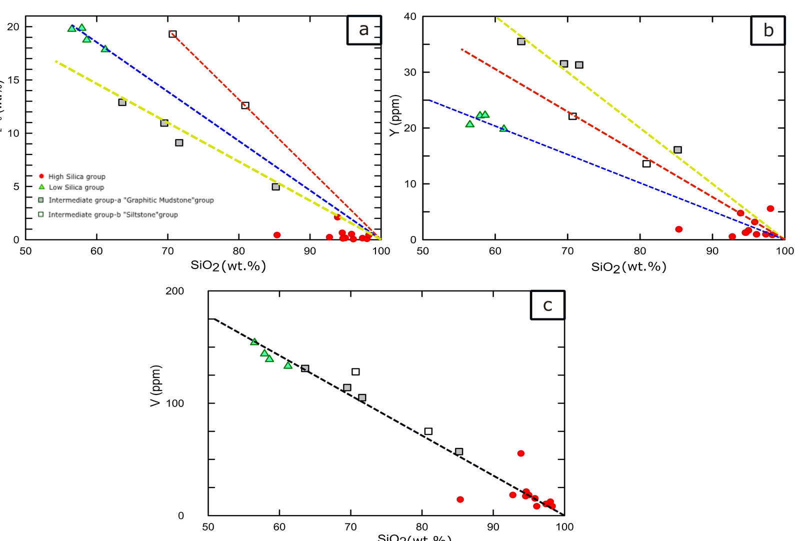
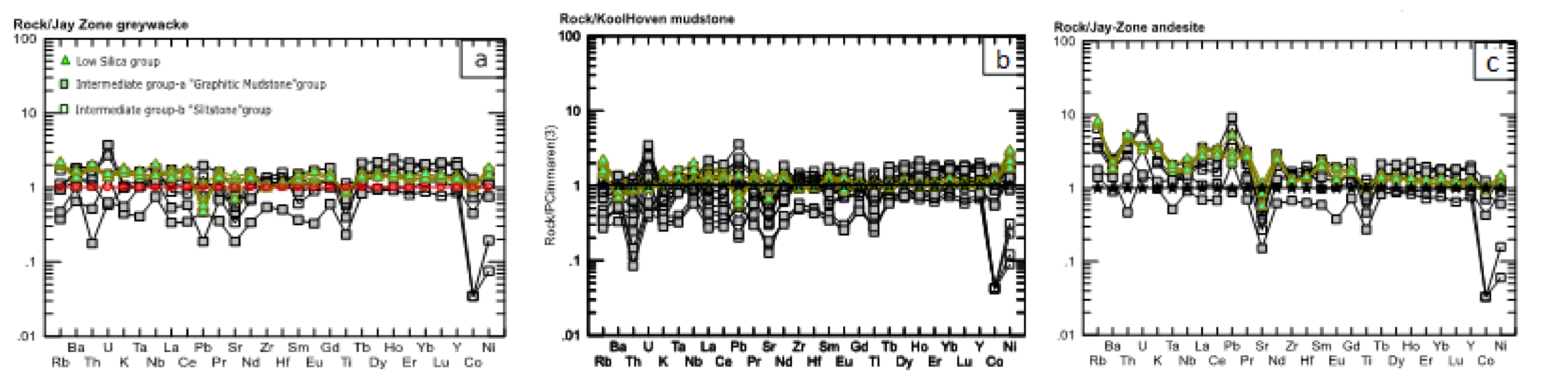
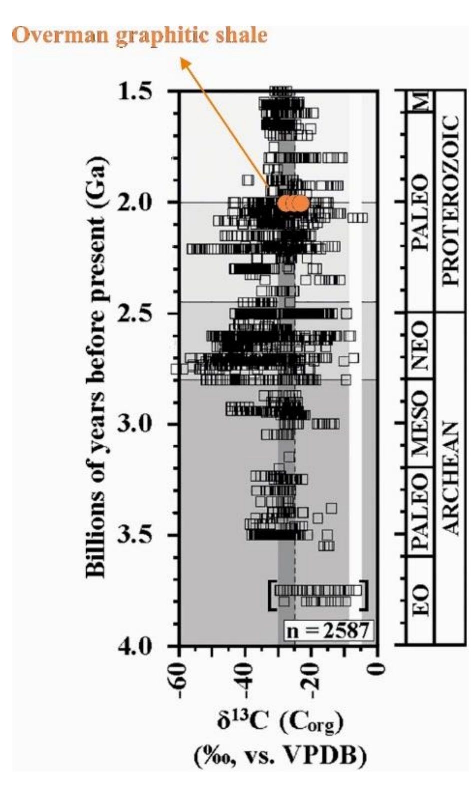


Fig. 3 a-b-c: Diagrams illustrating near-linear decreases of Al_2O_3, Y and V concentrations with increasing SiO_2. The three separate trends shown in the (a) and (b) panels are controlled by silicification and point to original lithological heterogeneity of precursor rocks.



Multi-element diagrams normalized to average concentrations in a) Jay Zone Greywacke b) Koolhoven mudstone and c) Jay-Zone andesite, according to data from Daoust (2016). Flat trends in a) and b), relative to the spiky pattern in c) favour (meta-)sedimentary over (meta-)volcanic rock types as precursors prior to silicification



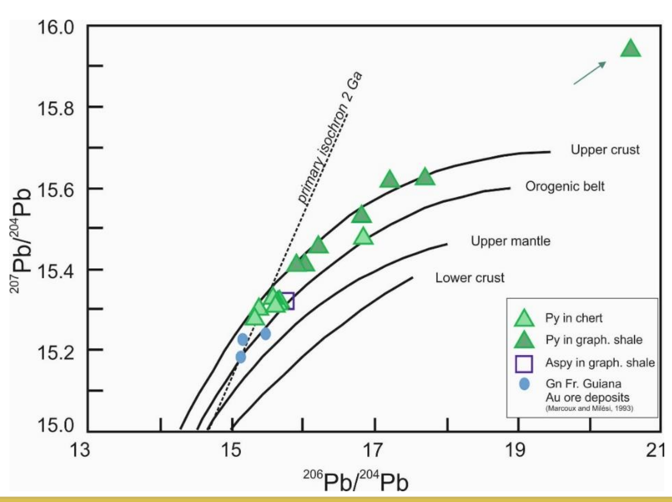
Carbon isotope signature of the Graphitic mudstone in a stratigraphic compilation of available data on organic C (Havig et al., 2017)

C-isotopes and the depositional environment of the graphitic mudstone

- $\delta^{13}C$ values between -25 and -30‰ for graphite in the mudstone/shale unit point to organic carbon
- Falls in the range of compiled Paleo-proterozoic organic carbon
- Graphitic mudstone likely deposited in reducing marine environment

Pb-isotope compositions of (arseno)pyrites and the source of gold

- Pb-ratios of pyrites in the graphitic mudstone more radiogenic than those in the silica body; probably due to local availability of U.
- Pb ratios in most unradiogenic population close to galenas from Au deposits in French Guiana; consistent with a Paleoproterozoic age around 2 Ga.
- Pb in sulphides (and probably also Au) largely derived from a source with a large Upper Crust component.



Pb Isotopes compositions of sulphides in the Overman deposit and comparison with data from French Guiana

References

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- Daoust, C., Voicu, G., Brisson, H. and Gauthier, M., (2011), Geological setting of the Paleoproterozoic Rosebel gold district, Guiana Shield, Suriname, Journal of South American Earth Sciences 32: 222-245.
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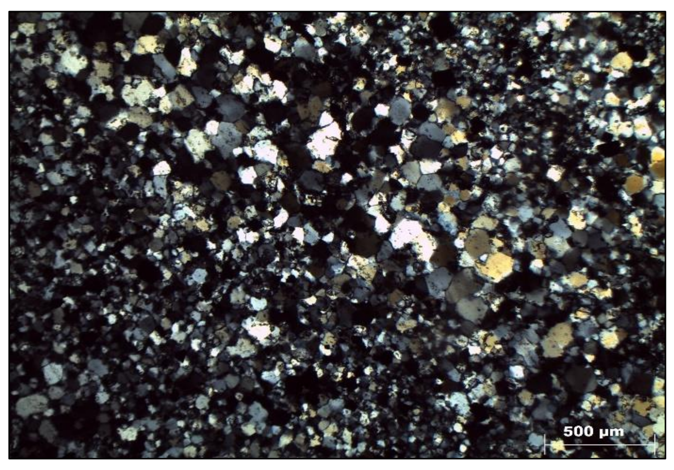
Gold mineralization

Prominent features

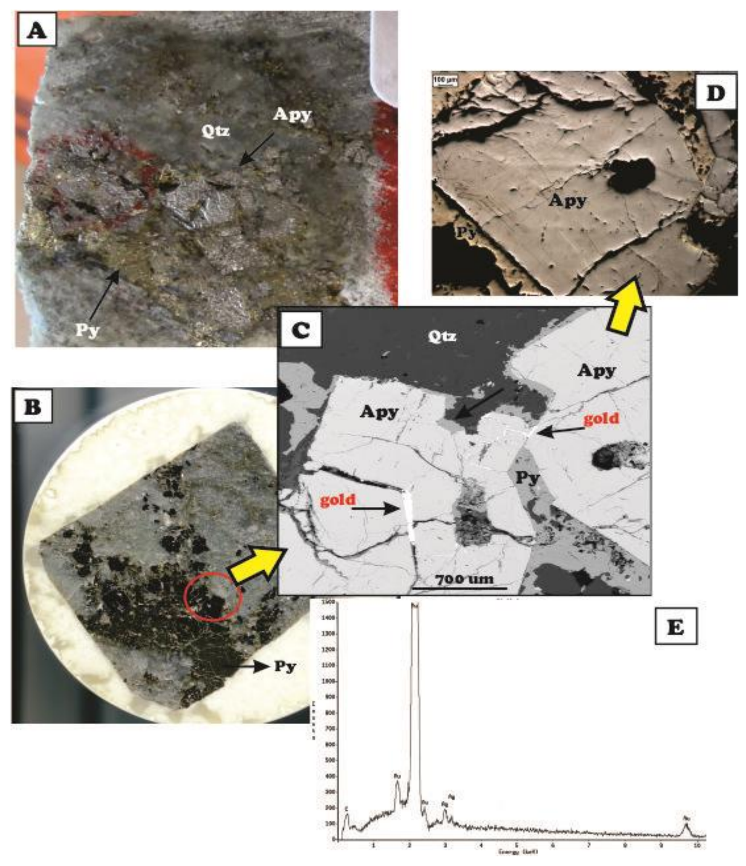
- Unusual gold mineralization within rigid silica body (90-95% quartz)
- Field association with sheared graphitic mudstone (with lower maximum Au content)
- Visible gold associated with arsenopyrite, and invisible gold in As-bearing sulphides
- Style of mineralization uncommon for the Marowijne Greenstone Belt



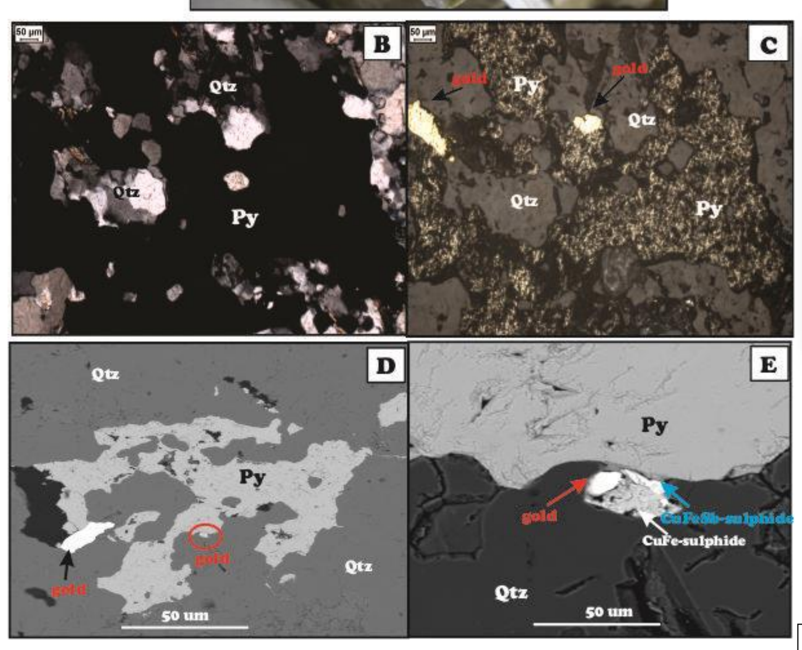
Microphotograph of a sample from the silica body

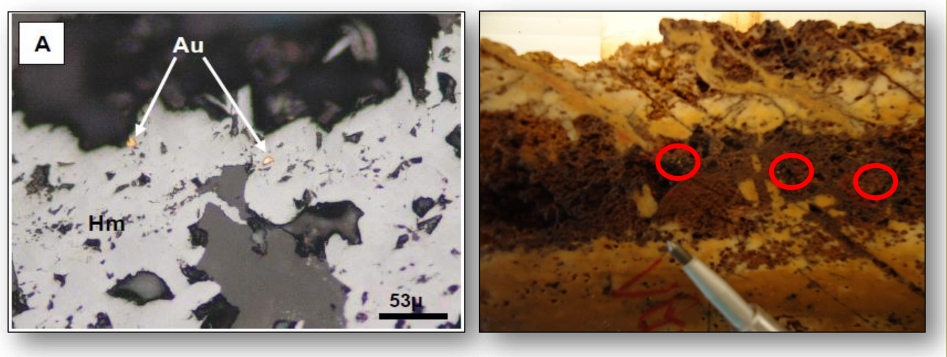
Sulphides

- Disseminated or fracture-associated in silica body
- Disseminated or vein-associated in graphitic mudstone
- Pyrite, arsenian pyrite and arsenopyrite most abundant; pyrrhotite, chalcocite, chalcopyrite, galena and other sulphides present as well
- Textural and mineral chemical evidence for multiple generations and a complex mineralization history



Gold in fractures in arsenopyrite





Gold associated with arsenopyrite, pyrite and iron-rich "veins" in silica rock

Micro-textures in the silica body indicate that

- Arsenopyrite is associated with native gold
- The secondary mineral assemblage includes hematite and carbonates

Preliminary LA-ICPMS data point to:

- Invisible gold in sulphides.
- Different gold concentrations in pyrite, arsenian pyrite and arsenopyrite.
- More gold in As-bearing sulphides than in pyrite.

Overman vs other primary gold deposits in Suriname

Overman	Widespread in Suriname
• Gold in brecciated and strongly silicified (ore)body with vuggy texture • Invisible gold in sulphides. • Abundance of arsenopyrite and presence of various other sulphides • Relationship between arsenopyrite and gold • Association with graphitic meta-sediment.	• Gold in greenstone lithologies, spatially associated with major fault zones. • Carbonate and sericite alteration. • Gold in/near quartz+carbonate veins in/near brittle-ductile shear zones. • Gold mostly in association with pyrite.

Work in progress

- Complementary geochemical analysis
- Chemical mapping of sulphides
- Sulphur isotope analysis of sulphides
- Re-Os dating on sulphides

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