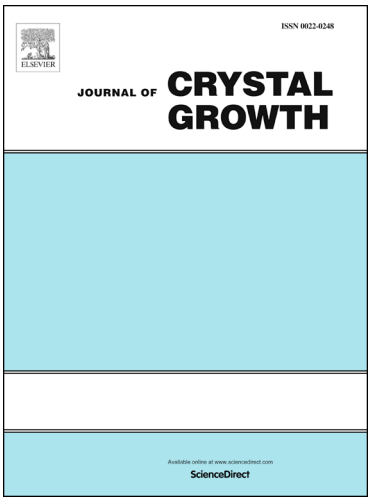

Au crystal growth on natural occurring Au—Ag aggregate elucidated by means of precession electron diffraction (PED).

Josep Roqué Rosell, Joaquim Portillo Serra, Thomas Aiglsperger, Sergi Plana-Ruiz, Trifon Trifonov, Joaquín Antonio Proenza

PII: S0022-0248(17)30700-5
DOI: https://doi.org/10.1016/j.jcrysgro.2017.11.031
Reference: CRYS 24389

To appear in: *Journal of Crystal Growth*

Received Date: 8 July 2017
Revised Date: 1 November 2017
Accepted Date: 27 November 2017

Please cite this article as: J. Roqué Rosell, J. Portillo Serra, T. Aiglsperger, S. Plana-Ruiz, T. Trifonov, J. Antonio Proenza, Au crystal growth on natural occurring Au—Ag aggregate elucidated by means of precession electron diffraction (PED)., *Journal of Crystal Growth* (2017), doi: https://doi.org/10.1016/j.jcrysgro.2017.11.031

Au crystal growth on natural occurring Au—Ag aggregate elucidated by means of precession electron diffraction (PED).

Josep Roqué Rosell[a*], Joaquim Portillo Serra[b,c], Thomas Aiglsperger[a], Sergi Plana-Ruiz[b], Trifon Trifonov[d] and Joaquín Antonio Proenza[a].

[a]Departament de Mineralogia, Petrologia i Geologia Aplicada, Universitat de Barcelona, Marti i Franquès s/n, Barcelona, Catalunya, 08028, Spain

[b]Centres Científics i Tecnològics, Universitat de Barcelona, Lluís Solé i Sabaris, 1-3, Barcelona, Catalunya, 08028, Spain

[c]NanoMEGAS, Boulevard Edmond Machtens 79, Brussels, B-1080, Belgium

[d]Centre de Recerca de Nanoenginyeria, Universitat Politècnica de Catalunya, Pascual i Vila, 15 Edifici C Planta -1, Barcelona, Catalunya, 08028, Spain

Correspondence email: josep.roque@ub.edu

In the present work, a lamella from an Au—Ag aggregate found in Ni-laterites has been examined using Transmission Electron Microscope to produce a series of Precision Electron Diffraction (PED) patterns. The analysis of the structural data obtained, coupled with Energy Dispersive X-ray microanalysis, made it possible to determine the orientation of twinned native gold growing on the Au—Ag aggregate. The native Au crystal domains are found to have grown at the outermost part of the aggregate whereas the inner core of the aggregate is an Au—Ag alloy (~4 wt% Ag). The submicron structural study of the natural occurring Au aggregate points to the mobilization and precipitation of gold in laterites and provides insights on Au aggregates development at supergene conditions. This