

Understanding Microstructure of Gold Particles in Placers. A New Vector for Transport Intensity?

Juan Gomez-Barreiro¹, Santos Barrios Sánchez¹, Inéz Puente-Orench², Juan Morales Sánchez Migallón¹
1. University of Salamanca, Salamanca, Spain, 2. Institute Laue-Langevin, Grenoble, France

Gold particles in alluvial environment are subjected to several processes that modify their primary signature. Weathering combined with several cycles of erosion and transport result into a heterogeneous modification of both composition and morphology. Besides, biomineralization could contribute to particle growth in supergene environments under specific circumstances. While de-alloying processes in supergene context and morphology-to-distance relationships have been investigated, little is known about the microstructural imprint in gold particles in alluvial deposits. The identification of microstructural vectors and its correlation with other factors could be critical to refine distance-to-bedrock primary sources. In this work we explore gold microstructure of alluvial gold particles with distinct Corey Shape factor from Central Spain by a combination of nondestructive synchrotron and neutron diffraction analysis. Our results discuss the potential of those techniques on the identification of particle population mixing, quantitative description of individual gold particles and transport intensity.