

## **Interaction between deformation and crustal melt generation at the plastic-brittle transition: a perspective from exhumed pseudotachylyte-bearing mylonites**

Fazio E.\*<sup>1</sup>, Fiannacca P.<sup>1</sup>, Lombardo R.<sup>1</sup> & Cirrincione R.<sup>1</sup>

<sup>1</sup> Università degli Studi di Catania, Dipartimento di Scienze Biol., Geol. Amb.

*Corresponding email:* [efazio@unict.it](mailto:efazio@unict.it)

*Keywords:* pseudotachylytes, mylonites, frictional melting.

The Rovaglioso outcrop of late Variscan foliated tonalites in Calabria (southern Italy), in the southern sector of the Palmi shear zone (Fazio et al., 2017) offers a valid opportunity to study the interactions between host igneous rocks and peculiar crustal melts formed by deformation at very specific conditions, i.e., frictional heating associated with seismic slip. Indeed, the tonalites contain a diffuse network of pseudotachylites, considered to have formed by extensional shearing at c. 33 Ma (Grande et al., 2009). These pseudotachylytes, after diffusively injecting the host tonalites, were involved into subsequent deformational events producing both plastic (mylonites overprinting pseudotachylytes) and brittle typical microstructures (cataclastic shear bands). Association of pseudotachylytes with foliated host rocks may suggest possible cyclic relationships between seismic slip and ductile deformation. Furthermore, the compositional features of these instantaneous crustal melts may help to understand the melting behavior of different rock types at various crustal and tectonic conditions.

Fazio E., Ortolano G. & Cirrincione R. (2017) - Eye-type folds at the Palmi shear zone (Calabria, Italy). *Int. J. Earth Sci. (Geol Rundsch)*, 106, 2039-2040. <https://doi.org/10.1007/s00531-017-1466-9>

Grande A., Di Vincenzo G., Prosser G. & Caggianelli A (2009) - Direct evidence of Middle Oligocene extension in the Calabria–Peloritani terrane from co-seismic faulting: the pseudotachylyte-bearing shear zones of Palmi (Southern Calabria, Italy). *Terra Nova*, 21, 293-303. <https://doi.org/10.1111/j.1365-3121.2009.00884.x>.