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Occurrence and microtexture of the mafic obsidian from the late Miocene basaltic plateau in the Primorye region, Russia

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We introduce the mafic obsidian consisting of andesitic glass ($\text{SiO}_2=56-59\text{wt.}\%$) without microlites (more than a few micrometers in size), which are found in the chilled margin of pillow lavas and hyaloclastites and of thin lava flows from the late Miocene basaltic plateau (Shkotovo plateau and Shfan plateau) in the Primorye region, Far East Russia (Popov et al., 2009). The chilled margins of mafic obsidian are more than 1 cm in thickness in their outcrops commonly, and they are found as cobbles with several to 10 cm in size. Furthermore the chilled part extends to the pillow interior to produce the large mafic obsidian. The mafic obsidians are black, dark-blue, and deep gray in color. These features show that the mafic magmas with low viscosity and high temperature were transformed into andesitic glasses under super cooling condition. It is possible to attain the high super cooling condition if the mafic magmas were erupted under the ice sheet during the ice age of 14-13 Ma.

Keywords: mafic obsidian, basaltic plateau, Far East Russia, pillow lava