Vancouver Kimberlite Cluster

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Dear Vancouver Kimberlite Cluster,

Please join us on March 28th @ 6:00 PM where we will hear from Yana Fedortchouk. on the topic of interpreting dissolution features on the surface of diamonds. Please see below for more details.

After the talk, we invite all guests to join us for a drink and discussion at 7:00 pm at the Lennox Pub on 800 Granville St.

Dissolution features on diamond surfaces: What can they tell us?

March 28th@ 6:00 pm – UBC Robson Square Rm C400, 800 Robson Street

Yana Fedortchouk, *Associate Professor, Department of Earth Sciences, Dalhousie University.*

Diamonds are valued for their brilliance achieved by faceting of diamond crystals into the cut shapes that most efficiently reflect the light. However, diamond cut removes the long history of diamond growth and dissolution recorded in the surface features on rough diamonds. Growth features on diamond surfaces reflect the conditions of diamond-forming events in the mantle but are rarely preserved on natural diamonds due to their partial dissolution. The majority of natural diamonds show surface features resulted from dissolution both in the mantle source due to metasomatism and in the kimberlite magma during the ascent to the Earth's surfaces. Mantle-derived resorption features can be preserved on diamonds enclosed in mantle xenoliths and protected from the interaction with the kimberlite magma during the ascent. The diamonds exposed to the reaction with the kimberlite magma develop kimberlite-induced dissolution features. This talk will discuss the large diversity of surface dissolution features on diamonds recovered from kimberlites. It will examine how the shape, size, and orientation of certain features can be used to deduce the conditions of kimberlite emplacement using the results of diamond dissolution experiments and observations on natural diamonds. The talk will discuss what we can learn about the behavior of volatiles and exsolution of fluid in kimberlite magma and how this supports or contradicts to what we know about kimberlitic fluid. The results of experiments conducted at mantle conditions are used to examine the kind of dissolution surfaces developed by diamonds during mantle metasomatism in fluids, in aqueous silicate melts and in carbonatitic melts. Comparison to the features of natural diamonds will assess what media dissolves diamond in the mantle, the prevalent diamond-destructive metasomatic agent, and will try to explain the repetitive cycles of growth and dissolution events recorded in single diamond crystals.