Jacquelyn Loven

Notes

12 June 2017

* It doesn’t make sense to not do the reference plane reset on each image because then the software makes you guess where the plane is visually, given a laser intensity profile. Each reference plane has been reset by excluding cracks and possible pileup regions as much as possible (loose) and by choosing the smallest possible rectangle around the indent without touching the indent (tight).
* Areas smaller than 5000 pixels are ignored to get just the indent.
* Just setting the reference plane is not enough to reliably catch indents in microscope slides at loads lower than 1961 mN. Also, primary radial cracks are picked up by the profiler as being part of the indent are when it’s just reference planed: Gaussian blur or height cutoff needed?
* For loads 1961 mN and above, how does where you choose your reference plane matter? Tight is an average of -3.27 ± 7.16 % different in area from loose.

13 June 2017

* Now to remove the effect of cracks in the area, I’m cutting the DCL/ BCL level down. Setting DCL = 1.00% and BCL = 99.5%.
* After doing this, the lower loads (less than 1961 mN) still need some more processing to get an area.
* Some notes about pictures of Caila’s indents:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **39.75 sample** | **Primary radials** | **Secondary radials** | **Median** | **Shallow laterals** | **Cone** |
| **490** |  |  | ? |  |  |
| **980** |  |  | ? | X |  |
| **1961** | X | X | ? | X |  |
| **2942** | X | X | ? | X |  |
| **4903** | X | X | ? | X |  |
| **9807** | X | X | ? | X |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **45.14 sample** | **Primary radials** | **Secondary radials** | **Median** | **Shallow laterals** | **Cone** |
| **490** |  |  | ? |  |  |
| **980** |  | X | ? |  |  |
| **1961** | X | X | ? |  |  |
| **2942** | X | X | ? |  |  |
| **4903** | X | X | ? | X |  |
| **9807** | X | X | ? | X |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **48.51 sample** | **Primary radials** | **Secondary radials** | **Median** | **Shallow laterals** | **Cone** |
| **245** |  |  | ? |  |  |
| **490** |  |  | ? |  |  |
| **980** |  | X | ? |  |  |
| **1961** | X | X | ? |  |  |
| **2942** | X | X | ? | X |  |
| **4903** | X | X | ? | X |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **60.61 sample** | **Primary radials** | **Secondary radials** | **Median** | **Shallow laterals** | **Cone** |
| **980** | X | X | ? |  |  |
| **1961** | X | X | ? | X |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **85.98 sample** | **Primary radials** | **Secondary radials** | **Median** | **Shallow laterals** | **Cone** |
| **980** |  |  | ? | X |  |
| **1961** |  |  | ? | X |  |
| **2942** | X |  | ? | X | X |
| **4903** | X | X | ? | X | X |
| **9807** | X | X | ? | X | X |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **89.93 sample** | **Primary radials** | **Secondary radials** | **Median** | **Shallow laterals** | **Cone** |
| **980** |  |  | ? | X | X |
| **1961** | X | X | ? | X |  |
| **2942** | X | X | ? | X | X |
| **4903** | X |  | ? | X |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **100 sample** | **Primary radials** | **Secondary radials** | **Median** | **Shallow laterals** | **Cone** |
| **245** |  |  | ? | X |  |
| **490** |  |  | ? | X |  |
| **980** | X |  | ? | X |  |
| **1961** | X | X | ? | X | X |
| **2942** | X | X | ? | X | X |
| **4903** | X |  | ? | X |  |
| **9807** | X | X | ? | X |  |

* Cone cracks start at 90% silica at high loads (2942 mN).
* Also I really don’t see the indentation size effect (ISE) upon looking again at old data.

14 June 2017

* I definitely see median cracks, or at least ones that extend to the center of the indent at loads of 1961 on microscope glass. Since they don’t come out the other side, it’s also possible they’re just extended radial cracks.
* 2 nm gold not enough. 8-10 nm carbon on top also not enough. It looks dirty but not opaque. Another 8-10 nm on top still isn’t good enough.