## 附加文件

附加文件1. 角闪石族矿物分类命名图解及投点



图1.1钠-钙角闪石组角闪石组的矿物分类命名图解及投点（刘显凡, 2015， 下同）



图1.2 钙角闪石组的矿物分类命名图解及投点



图1.3钠角闪石组的矿物分类命名图解及投点

附加文件2.

表5 金红石出溶体与斜黝帘石主晶的结晶学对应关系

Table 6. CORs between rutile inclusions and clinozoisite

|  |  |  |  |
| --- | --- | --- | --- |
| 薄片名称 | 颗粒名称 | 出溶体名称 | 结晶学对应关系 |
| HA-10 | 颗粒1 | Rt-1-2 | {001}Rt // {010}Czo{100}Rt // {001}Czo |
| Rt-4-6 | {001}Rt // {010}Czo{110}Rt //<001>Czo |
| 颗粒2 | Rt-8 | ——\* |
| Rt-9-10-11 | {001}Rt //{100}Czo{110}Rt //<001>Czo{111}Rt //{110}Czo |
| 颗粒3 | Rt-12-15-16-19-23 | {110}Rt //{001}Czo |
| Rt-13 | {011}Rt //<100>Czo |
| Rt-14 | {001}Rt // {010}Czo{110}Rt //<001>Czo |
| Rt-17 | {001}Rt // {010}Czo{110}Rt //<001>Czo{111}Rt //{111}Czo |
| Rt-18 | {110}Rt //<001>Czo【近】 |
| Rt-21 | ———— |
| Rt-22 | {110}Rt //{001}Czo |
| Rt-25 | {110}Rt //{001}Czo{011}Rt //{110}Czo |
|  |  | Rt-26 | {100}Rt //{001}Czo【近】 |
| 颗粒4 | Rt-33 | {100}Rt //{001}Czo{001}Rt //{010}Czo |
| Rt-34 | {100}Rt //{110}Czo |
| Rt-37 | {111}Rt //{100}Czo |
| Rt-49 | {111}Rt //<001>Czo{301}Rt //{001}Czo |
| Rt-35-36-45-46-47-48 | {100}Rt//<001>Czo{111}Rt //<100>Czo |
| HA-10-a | 区域1 | Rt-1-3-4-12-13 | {001}Rt // {111}Czo{301}Rt //<001>Czo{011}Rt // {010}Czo |
| 区域2 | Rt-14 | {301}Rt //<001>Czo【近】 |
| Rt-15 | {110}Rt // <001>Czo |
| Rt-16-18 | {301}Rt //<001>Czo{001}Rt // {111}Czo |
| Rt-17 | {100}Rt //<001>Czo |
| 区域3 | Rt-32 | {100}Rt //<001>Czo{110}Rt //{001}Czo |
| Rt-33-34-35-36-37 | {001}Rt // {100}Czo{100}Rt //<001>Czo{100}Rt // {010}Czo |
| 区域4 | Rt-44-58-60 | {011}Rt // {100}Czo |
| Rt-45 | —— |
| Rt-46 | —— |
| Rt-47 | {301}Rt // <100>Czo |
| Rt-48-57 | {001}Rt // {100}Czo{100}Rt // <001>Czo{100}Rt // {010}Czo{111}Rt //{111}Czo |
| Rt-59 | {301}Rt // {001}Czo{110}Rt //{111}Czo |
| 区域5 | Rt-61-63 | {110}Rt // <001>Czo |
| 区域6 | Rt-67 | —— |
| Rt-68 | {110}Rt //{110}Czo |
| Rt-69 | {100}Rt // <001>Czo |
| Rt-70 | {110}Rt // <001>Czo{111}Rt //{111}Czo |
|  |  | Rt-71 | {110}Rt // <001>Czo{111}Rt //{110}Czo |
| Rt-72 | {110}Rt //{110}Czo{111}Rt // <001>Czo |
| Rt-73 | {001}Rt // {100}Czo{110}Rt // <001>Czo |
| Rt-74 | {110}Rt //<100>Czo{111}Rt //{010}Czo |
| Rt-75 | {110}Rt //{001}Czo |
| Rt-76 | {301}Rt //<001>Czo |
| Rt-77 | —— |
| 区域7 | Czo(91-95) | Rt-87 | —— |
| Rt-88-89-90 | {301}Rt //<001>Czo{301}Rt // {100}Czo |
| Czo(101-106) | Rt-96-97-98-99-100 | {001}Rt //{110}Czo{301}Rt //<001>Czo【近】 |
| HA-10-b | Q1-1 | Rt-1-2-5-6-8-9 | {110}Rt //{001}Czo{001}Rt //{110}Czo |
| Rt-3 | {100}Rt //<001>Czo{011}Rt //{100}Czo |
| Rt-4 | —— |
| Rt-7 | {110}Rt //{001}Czo{011}Rt //{010}Czo |
| Q1-2 | Rt-47 | {011}Rt //<100>Czo |
| Rt-48 | {011}Rt //<100>Czo{100}Rt //{001}Czo |
| Rt-49-50-52-53-65-66-68 | {100}Rt //<001>Czo{011}Rt //{100}Czo{301}Rt //{010}Czo |
| Rt-51 | {111}Rt //<001>Czo{011}Rt //<100>Czo |
| Rt-67 | {100}Rt //<001>Czo{100}Rt //{100}Czo |
| Rt-69 | {100}Rt //<001>Czo |
| Q1-3 | Rt-20-21-22-24-26-27 | {301}Rt //<001>Czo{011}Rt //{010}Czo |
| Rt-18 | {111}Rt //<001>Czo{301}Rt //{010}Czo |
| HA-10-b |  | Rt-19-25 | {001}Rt //{010}Czo{100}Rt //<001>Czo |
| Rt-23 | {011}Rt //{010}Czo【近】{100}Rt //<100>Czo |
| Q1-4 | Rt-38 | {001}Rt //<001>Czo{110}Rt //<100>Czo |
| Rt-39 | {001}Rt //{001}Czo |
| Rt-40 | {001}Rt //{001}Czo |
| Q2-1 | Rt-74 | {110}Rt //<001>Czo{001}Rt //{010}Czo |
| Q2-2 | Rt-81-82-83 | {110}Rt //{001}Czo |
| Rt-84 | {301}Rt //<001>Czo |
| Rt-85 | —— |
| Rt-86 | {301}Rt //<001>Czo |
| Rt-94 | {001}Rt //{010}Czo{100}Rt//<100>Czo{100}Rt//{001}Czo |
| Rt-95 | {301}Rt //<001>Czo{100}Rt //{110}Czo{011}Rt //<100>Czo |
| Rt-96 | {001}Rt //{010}Czo{100}Rt //<001>Czo{100}Rt//{001}Czo |
| Rt-97 | {301}Rt //<001>Czo{100}Rt//{110}Czo |
| Q3-1 | Rt-102-103 | {100}Rt //{110}Czo |
| Rt-104-105 | {301}Rt //<001>Czo |
| Rt-106 | —— |
| Rt-107 | —— |
| Rt-108-109-110-111-127-128 | {011}Rt //{010}Czo{100}Rt //{101}Czo【罕】 |
| Rt-112 | {100}Rt //{001}Czo{011}Rt //<100>Czo |
| Rt-113 | {110}Rt //<100>Czo |
| Rt-114-115 | {301}Rt //<001>Czo{111}Rt //{111}Czo |
| Rt-116 | {301}Rt //{001}Czo |
| Rt-117-118 | {011}Rt //{110}Czo |
| HA-10-b |  | Rt-119-130-131-141-142-143-144-145 | {001}Rt //{010}Czo{110}Rt //<100>Czo |
| Rt-129 | {100}Rt //{101}Czo【罕】{011}Rt //{110}Czo |
| Rt-132-133 | {110}Rt //{001}Czo |
| Rt-134 | {301}Rt //<001>Czo{001}Rt //{010}Czo |
| Rt-135 | {111}Rt //{110}Czo |
| Rt-136 | —— |
| Rt-146-147 | {001}Rt //{010}Czo{110}Rt //<100>Czo |
| Q3-2 | Rt-154-155 | {001}Rt //{010}Czo{110}Rt //<001>Czo |
| Rt-156-161-162-163-164-165-166-167 | {110}Rt //<001>Czo{011}Rt //{010}Czo |
| Rt-157-158 | {001}Rt //{010}Czo{110}Rt //<001>Czo{100}Rt //{001}Czo |
| Rt-159-160 | {001}Rt //{010}Czo{110}Rt //<001>Czo |
| Rt-176-177-179 | {001}Rt //{010}Czo{110}Rt //{001}Czo{100}Rt //{101}Czo |
| Rt-178 | {100}Rt //{001}Czo【近】{301}Rt //<001>Czo |
| Q3-3 | Rt-184 | {011}Rt //{010}Czo |
| Rt-185 | {111}Rt //{110}Czo{301}Rt //<001>Czo |
| Rt-186 | —— |
| Q3-4 | Rt-194-195 | {001}Rt //{11-1}Czo{011}Rt //{110}Czo |
| Rt-196-197-198-199-200-201-202-208-209-215-216-217-218 | {301}Rt //<001>Czo{110}Rt //{102}Czo{111}Rt //{010}Czo |
| Rt-204 | {001}Rt //{010}Czo{110}Rt //{001}Czo{100}Rt //<001>Czo{011}Rt //{110}Czo |
| HA-10-b |  | Rt-205 | {001}Rt //{010}Czo{100}Rt //<100>Czo |
| Rt-206 | {001}Rt //{010}Czo【近】{110}Rt //{001}Czo【近】 |
| Rt-207 | {100}Rt //{001}Czo{001}Rt //{010}Czo【近】 |
| Rt-210 | {111}Rt //<001>Czo |
| Rt-211-212-214 | {110}Rt //<001>Czo{001}Rt //{110}Czo |
| Rt-213 | —— |
| Q3-6 | Rt-229-230-231-234-239-243-244-250-251-253-254-255 | {301}Rt //<001>Czo【近】{001}Rt //{102}Czo |
| Rt-228 | {001}Rt //{001}Czo【近】 |
| Rt-232 | {111}Rt //{001}Czo{111}Rt //{100}Czo |
| Rt-233-242 | {301}Rt //<001>Czo【近】{301}Rt //{010}Czo |
| Rt-237 | {001}Rt //{001}Czo{110}Rt //{110}Czo【近】 |
| Rt-238 | {001}Rt //{001}Czo{110}Rt //{010}Czo{110}Rt //<100>Czo |
| Rt-241 | {110}Rt //<001>Czo |
| Rt-245-246-247 | {301}Rt //<001>Czo{111}Rt //{110}Czo |
| Rt-248-249 | {011}Rt //{100}Czo{111}Rt //{001}Czo |
| Rt-252 | {301}Rt //<001>Czo |
| Q4-1 | Rt-270-271 | {301}Rt //{110}Czo |
| Rt-272-277-282 | {011}Rt //{010}Czo{001}Rt //{111}Czo |
| Rt-273 | —— |
| Rt-274 | {301}Rt //{100}Czo |
| Rt-275-276-278-279-281 | {301}Rt //<001>Czo{100}Rt //{010}Czo{001}Rt //{101}Czo{011}Rt //{001}Czo |
| HA-10-b |  | Rt-280 | {001}Rt //{010}Czo{110}Rt //<100>Czo |
| Q4-2 | Rt-290-291-292 | {111}Rt //<001>Czo{100}Rt //<100>Czo{011}Rt //{001}Czo |
| Rt-293-294-304-305-309 | {110}Rt //<100>Czo |
| Rt-295 | {100}Rt //<001>Czo{001}Rt //{110}Czo |
| Rt-296 | —— |
| Rt-297 | {110}Rt //<100>Czo |
| Rt-298-299-300 | {001}Rt //<001>Czo【近】 |
| Rt-301 | {001}Rt //{010}Czo{110}Rt //<001>Czo{110}Rt //{100}Czo |
| Rt-302-308 | {001}Rt //{010}Czo{110}Rt //<001>Czo |
| Rt-303 | {301}Rt //<001>Czo{011}Rt //{010}Czo |
| Rt-306 | —— |
| Rt-307-310 | {001}Rt //<001>Czo{100}Rt //{010}Czo{100}Rt //{100}Czo{110}Rt //{110}Czo{011}Rt //{001}Czo |
| Rt-311 | {110}Rt //{100}Czo |
| Q4-3 | Rt-321-322 | {001}Rt //{010}Czo{100}Rt //<001>Czo{100}Rt //{100}Czo{111}Rt //{11-1}Czo{110}Rt //{102}Czo |
| Rt-323-324 | {001}Rt //{010}Czo{100}Rt //<001>Czo |
| Rt-325 | {100}Rt //{110}Czo |
| Rt-330 | {011}Rt //{100}Czo |
| Rt-326 | {111}Rt //{102}Czo |
| Rt-327 | {100}Rt //<001>Czo |
| HA-10-b | Q4-3 | Rt-328 | —— |
| Rt-329 | {011}Rt //{010}Czo{100}Rt //{001}Czo{001}Rt //{11-1}Czo |
| Q4-4 | Rt-332-333-334-337 | {100}Rt //<001>Czo{001}Rt //{010}Czo |

\*“——”表示金红石出溶体和斜黝帘石主晶无明显结晶学对应关系