



Cornell High-Q update

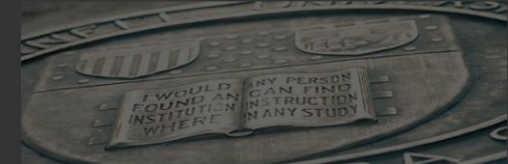
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Cornell University

TTC High-Q Working Group Meeting 4June2015



AES030, VT history



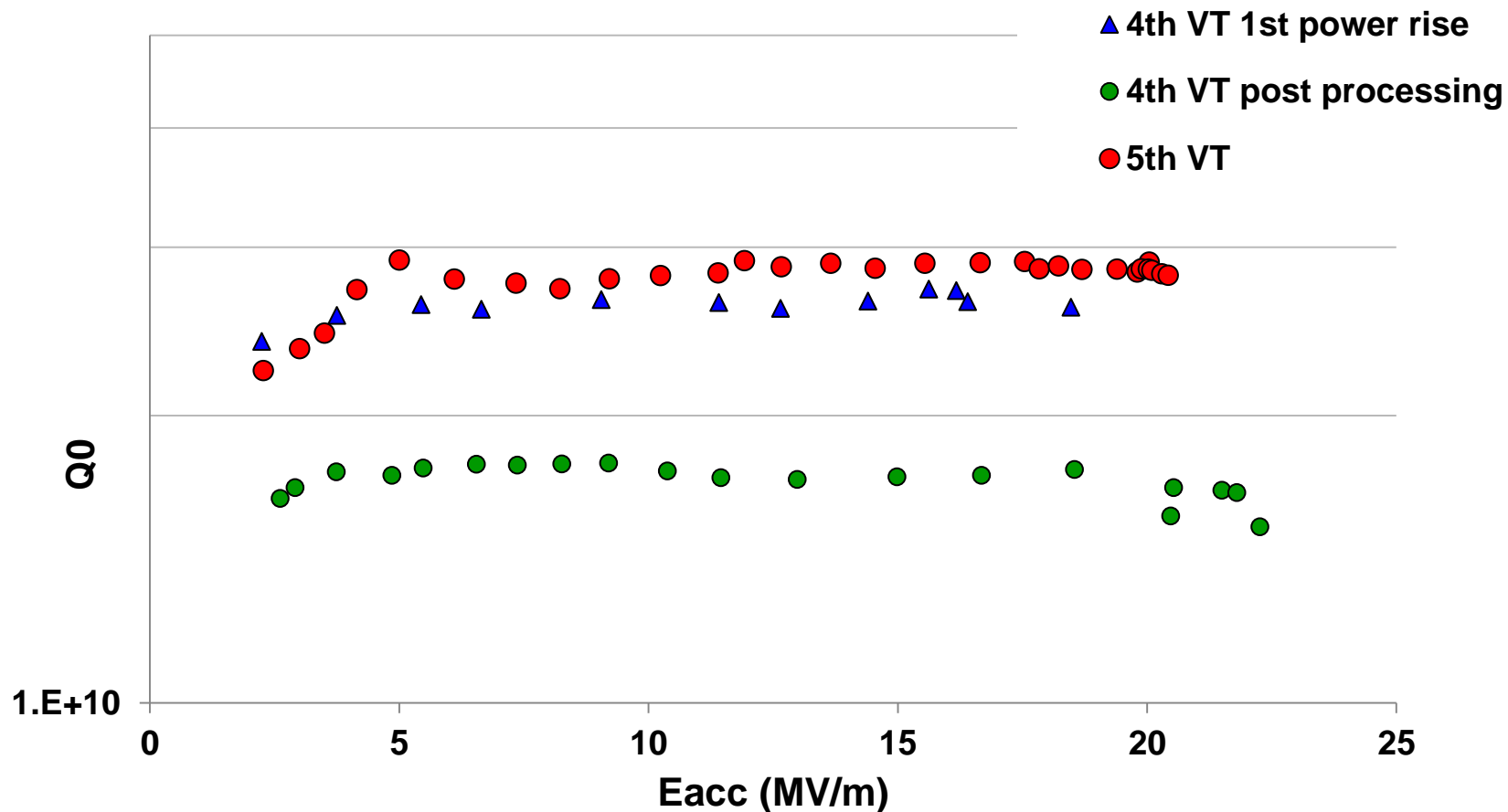
	VT1 N2 dope	VT2 Re-HPR	VT3 None dope baseline	VT4 N2 dope	VT5 Re-cool
Bulk VEP	120um	-	38um	-	-
Degas	800C*5hrs	-	-	800C*3hrs	-
N2 dope	20min./30min · ~40mTorr	-	-	6min./6min. ~30mTorr	-
Light VEP	26um	-	-	14um	-
USC+HPR	Yes	Yes	Yes	Yes	-
Qo at 16MV/m, 2K	2.5e10	3e10	1.7e10	2.7e10 → 1.7e10 *	2.9e10
Quench field	17MV/m	17MV/m	30MV/m	18MV/m → 22MV/m*	20MV/m
Limit	Quench FE free	Quench FE free	FE triggered by quench	Quench, FE free	Quench, FE free

* 4th VT; 1st quench at 18MV/m, processed up to 22MV/m, but Qo was degraded.





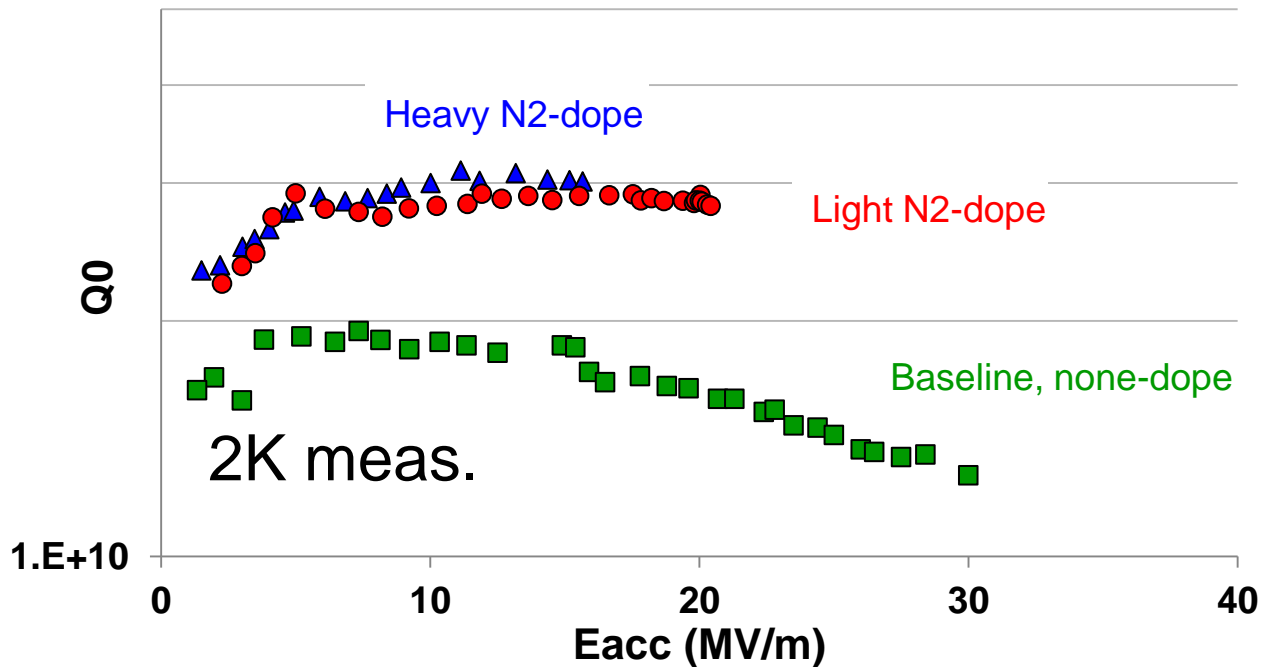
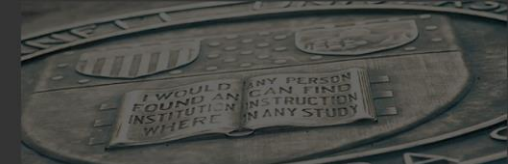
AES030, 4th & 5th VT at 2K



4th VT; 1st quench at 18MV/m, processed up to 22MV/m, but Qo was degraded.
5th VT; warm-up and re-cool. Quench at 20MV/m.

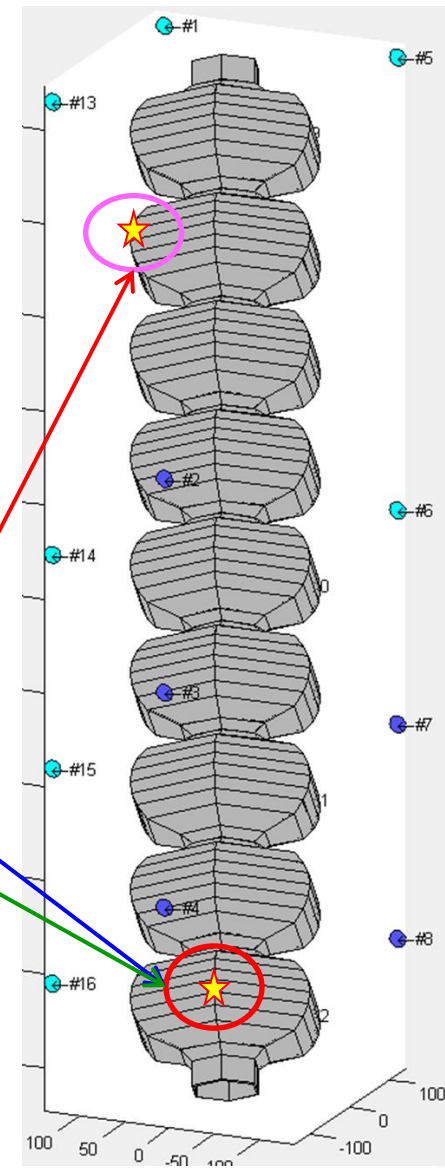


AES030 comparison



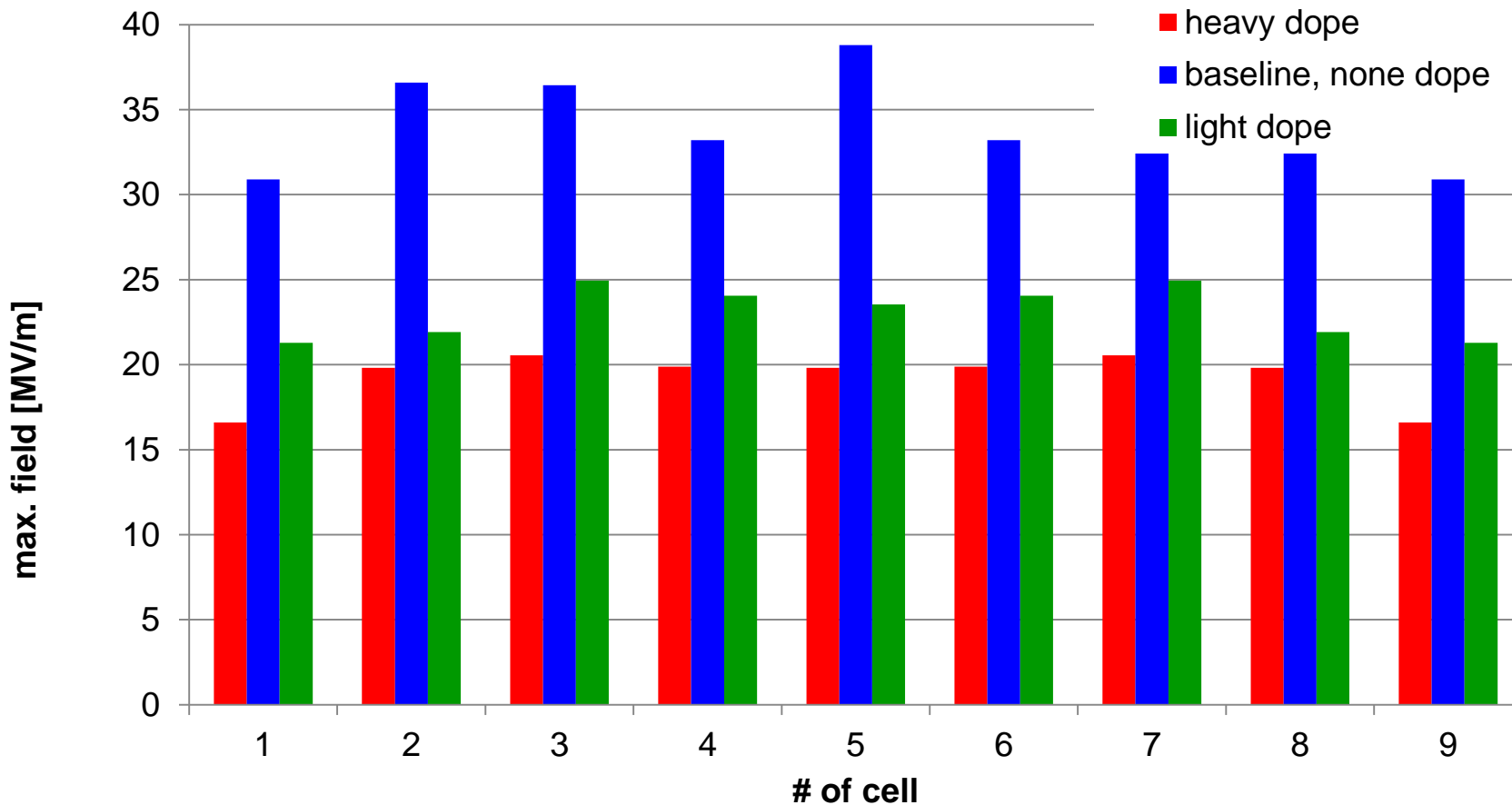
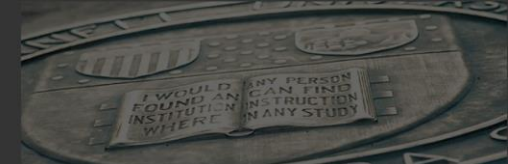
RF surface	Qo at 16MV/m	Pi-mode limit
Heavy N2 dope (20/30)	3.0e10	Quench, 17MV/m
Baseline, none dope	1.7e10	Quench, 30MV/m
Light N2 dope (6/6)	2.9e10	Quench, 20MV/m

- Quench location was identified with T-map and OST.
- No specific feature or defect was found by optical inspection so far.





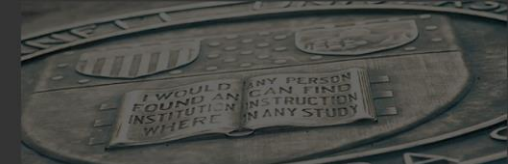
AES030, pass-band analysis



RF surface	Ave. Eacc_max
Heavy N2 dope (20/30)	19.3 ± 1.6 MV/m
Baseline, none dope	34.8 ± 2.8 MV/m
Light N2 dope (6/6)	23.1 ± 1.5 MV/m



HTC9-5 plans



- AES031 will be delivered to Cornell next week for HTC9-5.
- HTC assembly will be done during June, high power coupler, tuner, and HOM antennas will be installed.
- Starts cool down early July.
- Cavity performance testing and Tuner studies with FNAL team are planned.