

Reports on sensitivity measurement at KEK

**TTC/ARIES topical workshop on flux trapping and magnetic
shielding**

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Sensitivity measurement

Motivation

Want to know sensitivity [$n\Omega/mG$] at high gradient region

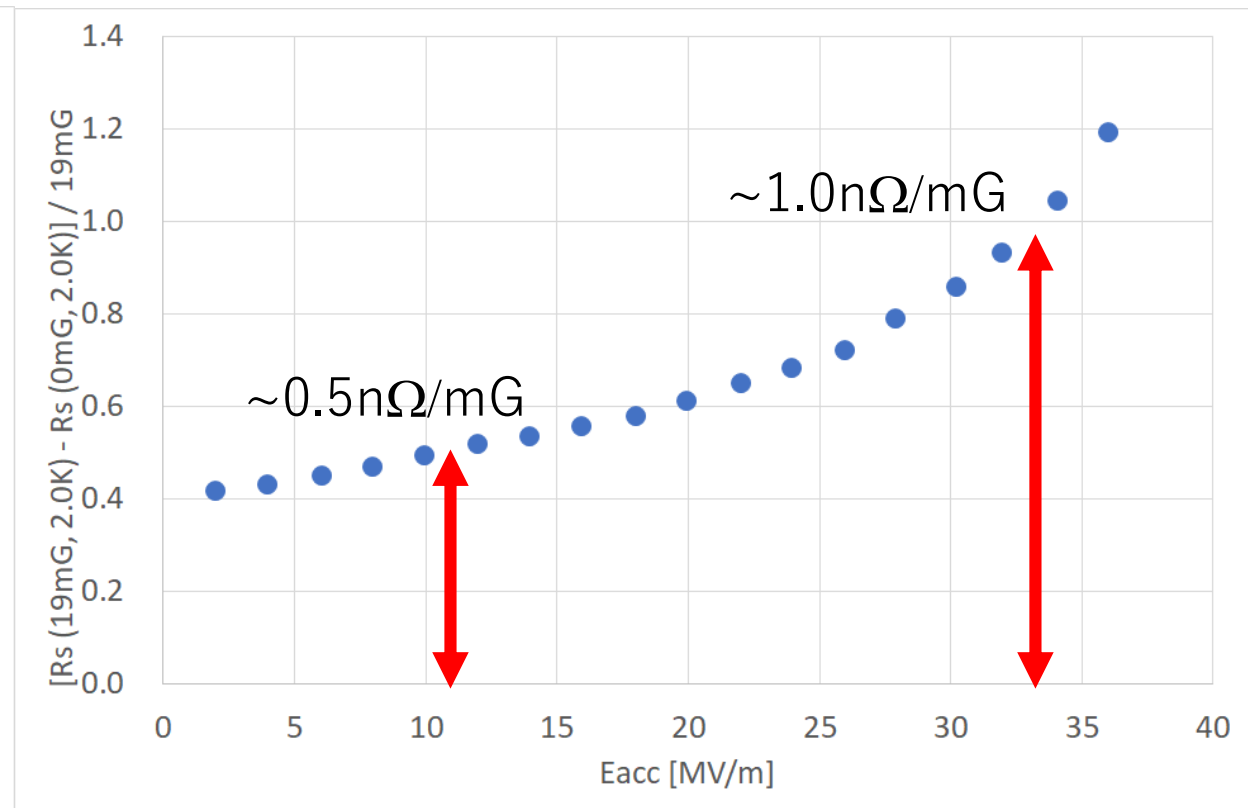
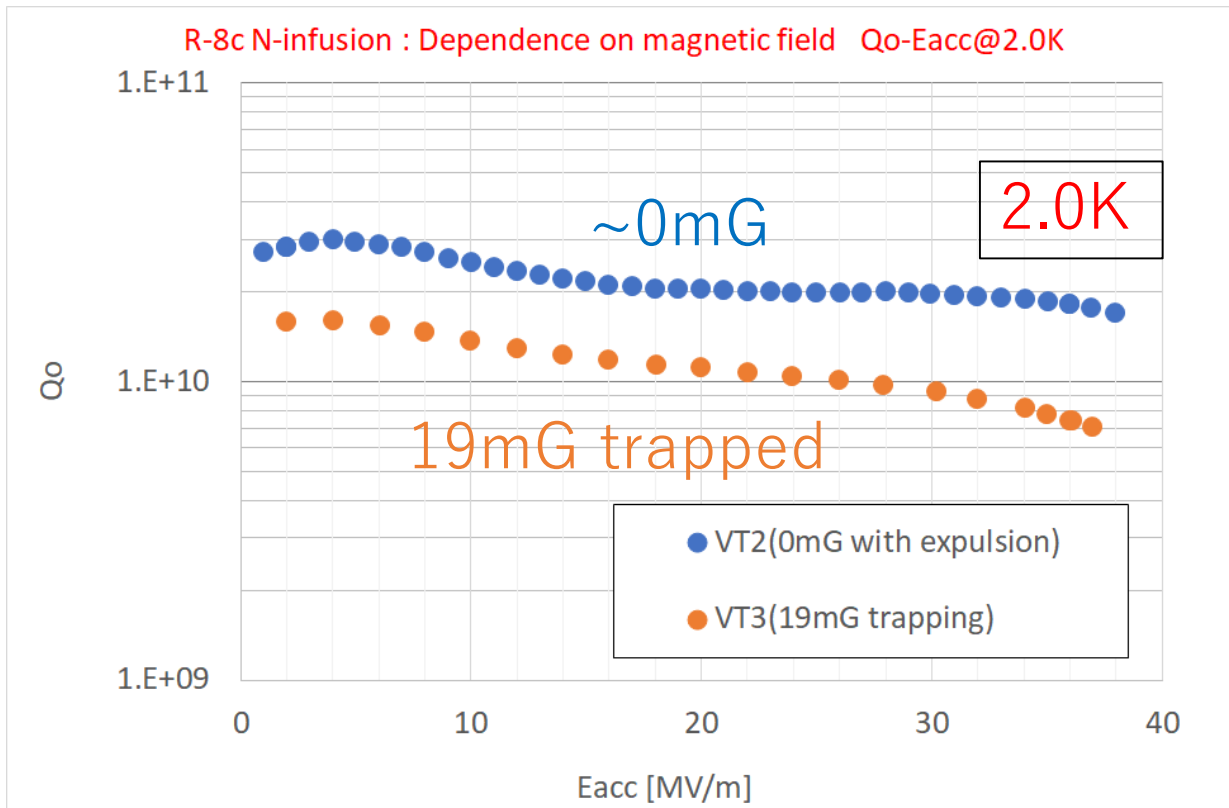
We performed sensitivity measurements for following single-cell cavities.

- Standard recipe (EP + 120C, 48h baking)
- N-infusion(800C + 120C, 48h with 3.3Pa N₂)

Sensitivity to flux trapping (N-infusion@J-PARC)

VT2: 0mG with expulsion condition \Rightarrow $\sim 0\text{mG}$

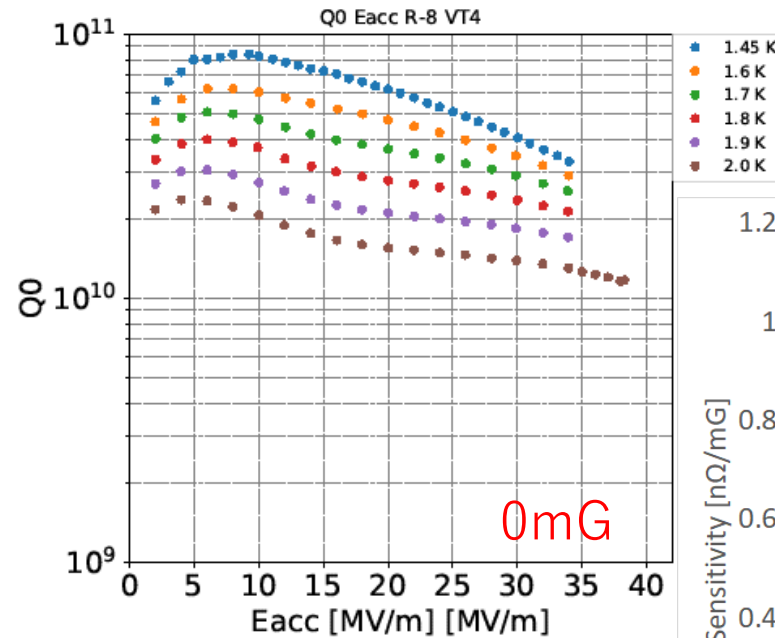
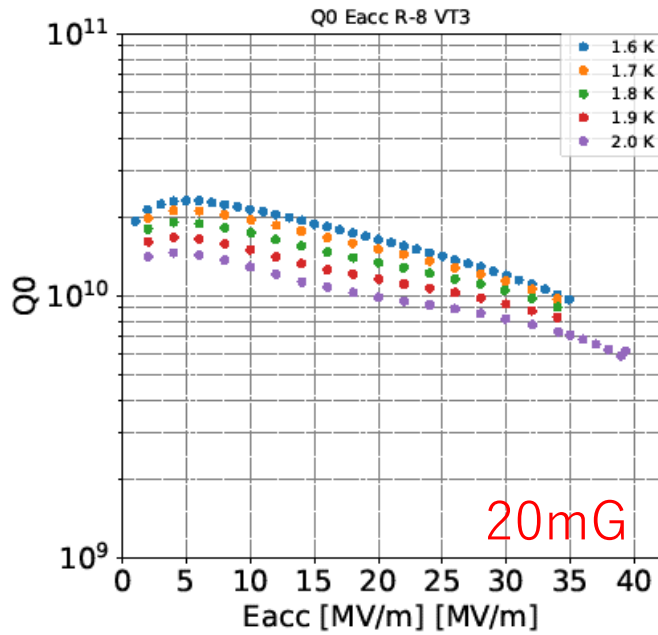
VT3: 20mG was applied and almost trapped \Rightarrow 19mG trapped (5% expulsion)



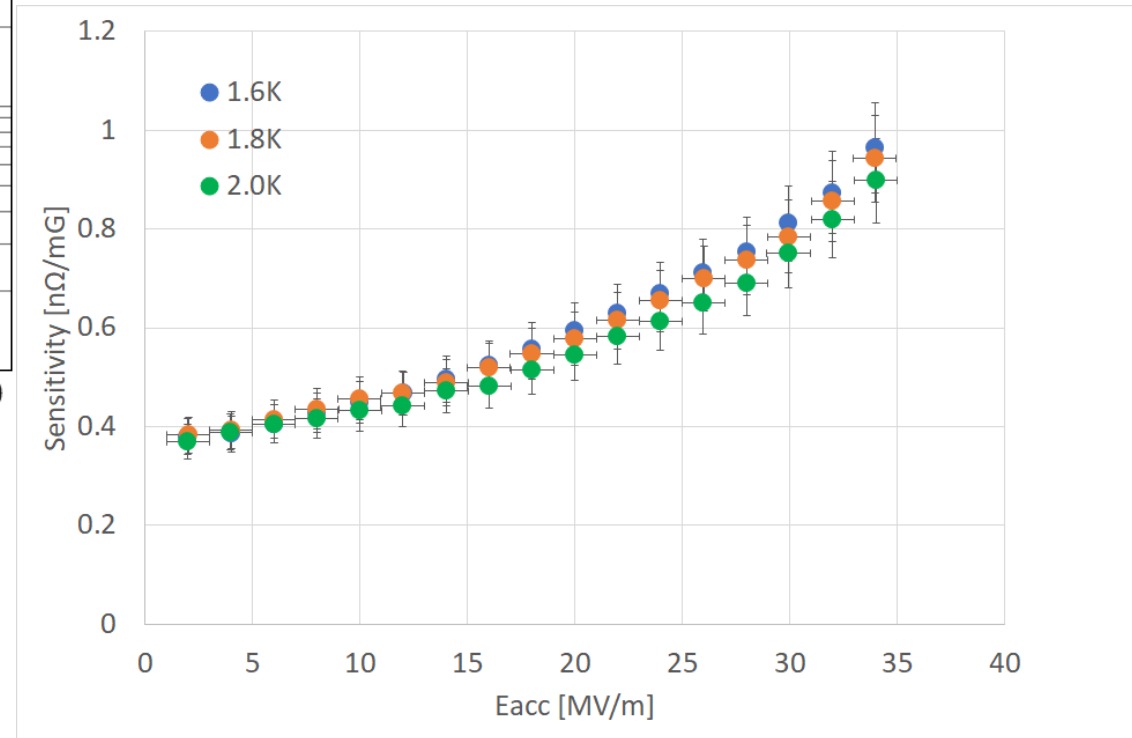
Sensitivity to flux trapping (EP+120C baking)

VT4: 0mG with expulsion condition $\Rightarrow \sim 0\text{mG}$

VT3: 20mG was applied and almost trapped $\Rightarrow 19\text{mG}$ trapped (5% expulsion)



$\sim 0.5\text{n}\Omega/\text{mG}$ @ 15MV/m
 $\sim 1.0\text{n}\Omega/\text{mG}$ @ 35MV/m



Summary

- We did sensitivity measurement for
 - N-infusion@J-PARC
 - standard recipe (final EP + Baking 120C, 36h)
- Both cavity shows very similar sensitivity behavior.
- Sensitivity is $\sim 1 \text{ n}\Omega/\text{mG}$ at $E_{\text{acc}} \sim 35 \text{ MV/m}$.

