

Quantum Hall resistance standard



Material: graphene with metal contacts

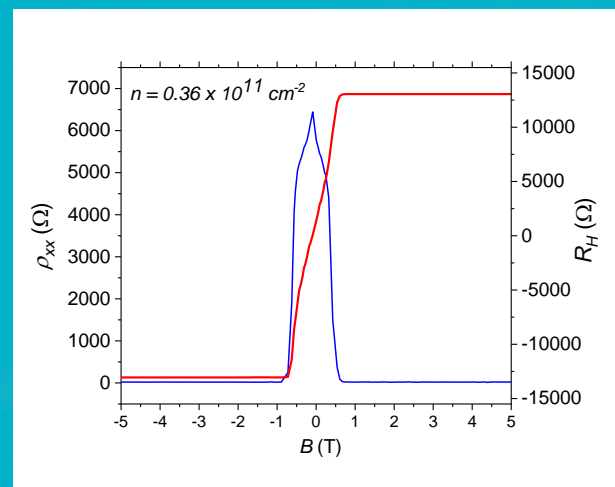
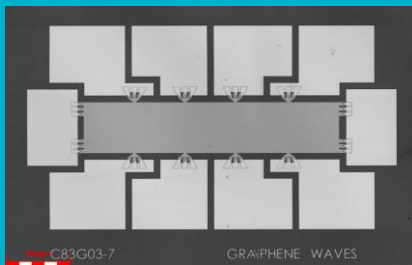
Substrate: silicon carbide

Applications: metrology, research

Description: Graphene-based quantum Hall resistance standard that can be operated in helium-free cryocooler.

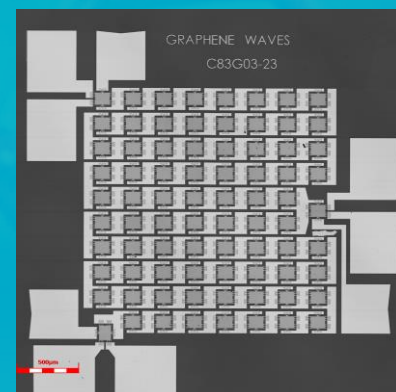
SH series

- Device is a single Hall bar with multiple contact pads.
- Hall resistance is quantized at $h/2e^2$ (~ 12.9 k Ω).
- Deviation from exact quantization of 5-10 parts in 10^9 .
- Compatible with commercial cryogen-free cryocooler.
- Operation condition: $T < 4$ K, $B > 5$ T.



AR series (in development)

- Device is an array or a network of multiple Hall bars.
- Hall resistance may have various quantized values.
 - 13 Hall bar device: $R \sim 1 \text{ k}\Omega$ ($h/26e^2$)
 - 78 Hall bar device: $R \sim 1 \text{ M}\Omega$ ($78h/e^2$)
- Compatible with commercial cryogen-free cryocooler.
- Operation condition: $T < 4$ K, $B > 5$ T.



* The scale bar in device images is 500 μm .

