



The thin oxide project (PXD_TO) - pre-irradiation results –

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Motivation

Wafer organization

Pre-irradiation measurements

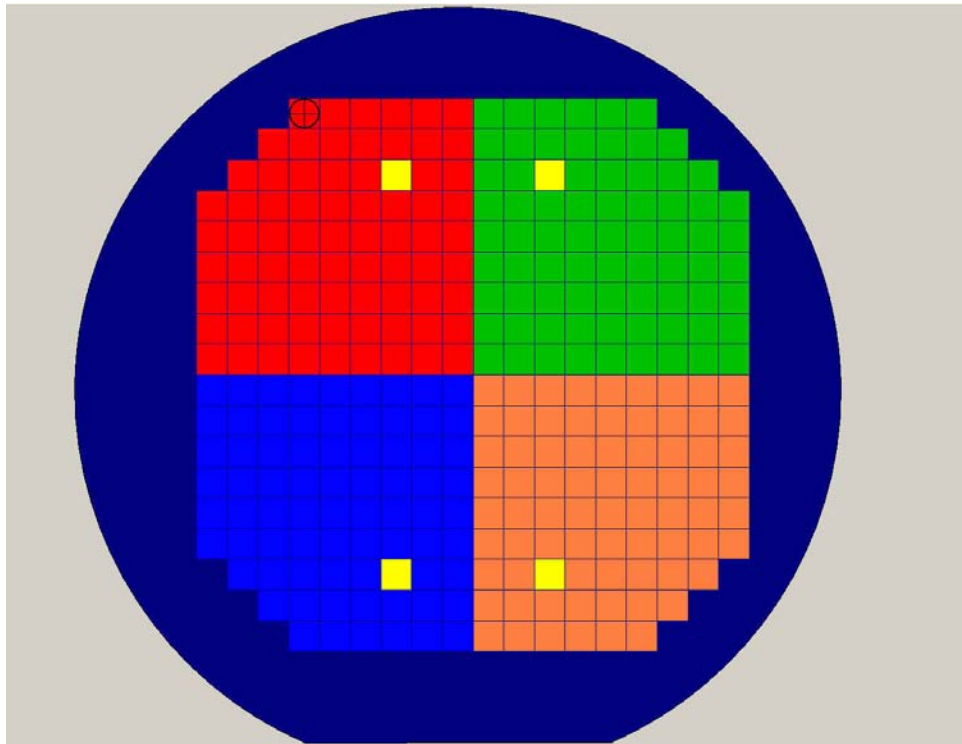
● What do we want to learn from PXD_TO ?



1. Check if transistors can work with thin oxide dielectric – break down?
2. Optimal combination (thickness) of Gate dielectric for the Belle II application - radiation tolerance
3. Optimize implantations for the shorter gate lengths so that V_{th} is close to zero
4. Homogeneity of the production – small transistor lengths

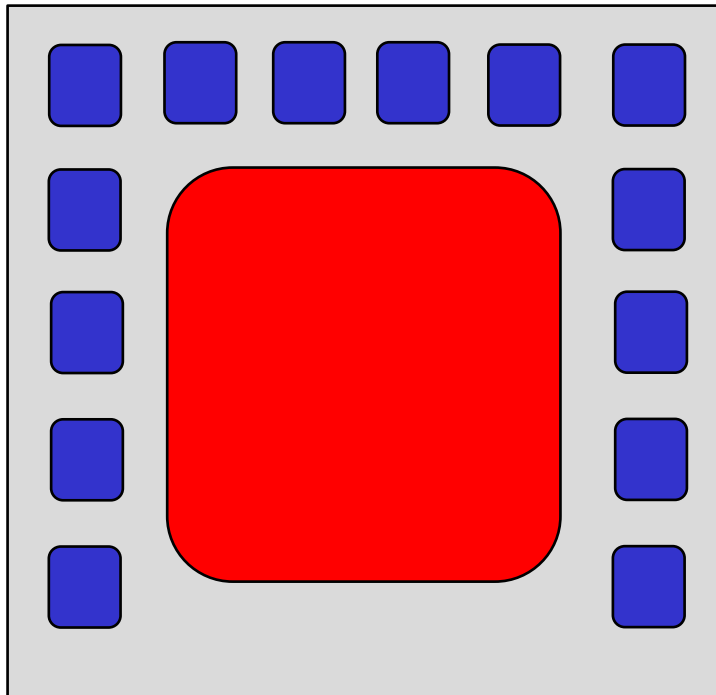
- Wafer organisation

One common thickness of oxide over the whole wafer
4 quadrants of wafers have 4 different layers of Ni



● Test structures

1. Diodes
2. MOS Capacitors
3. Gated Diodes
4. Transistors

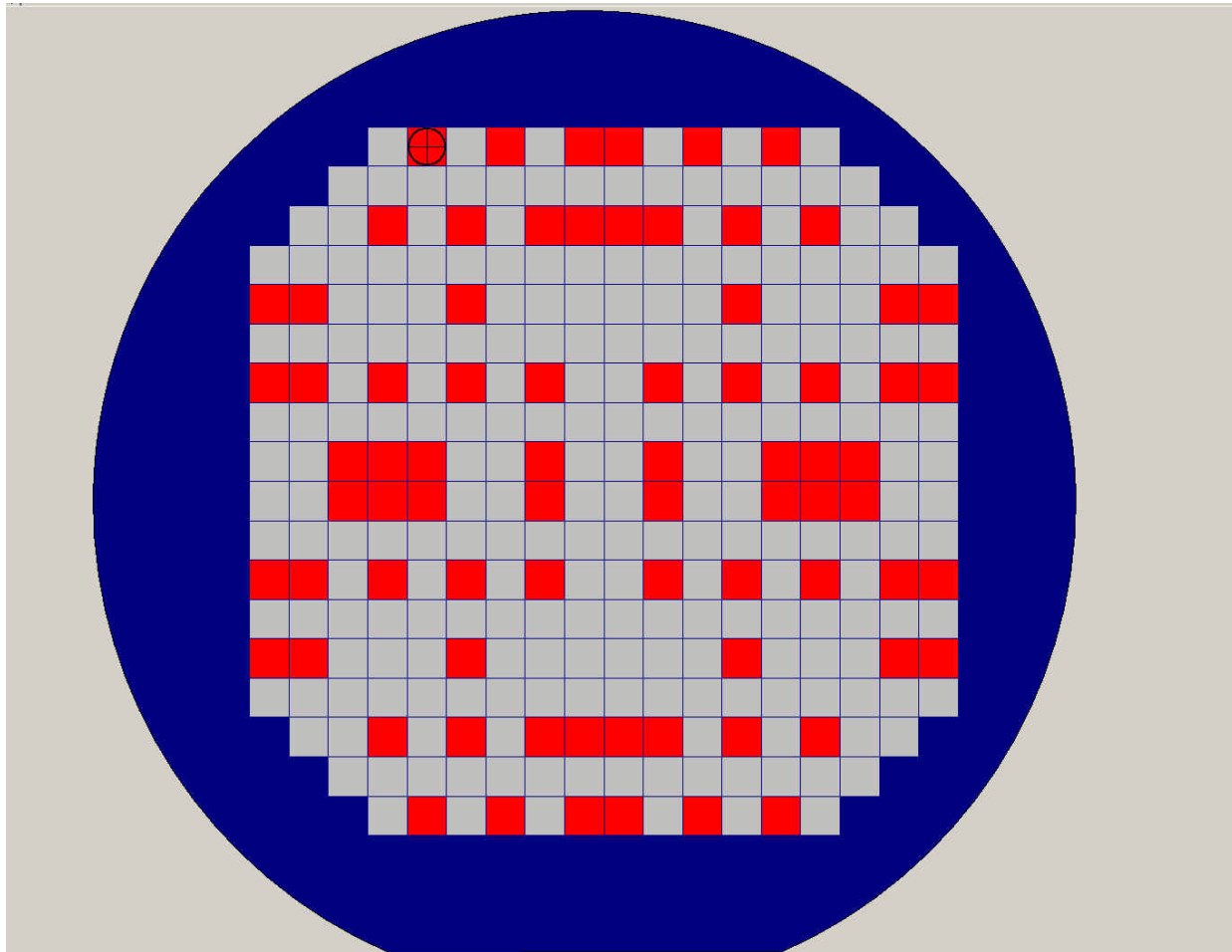


1 main big device
(Diode, GTD, CAP)

14 transistors

● Testing

Semiautomatic probing PA150



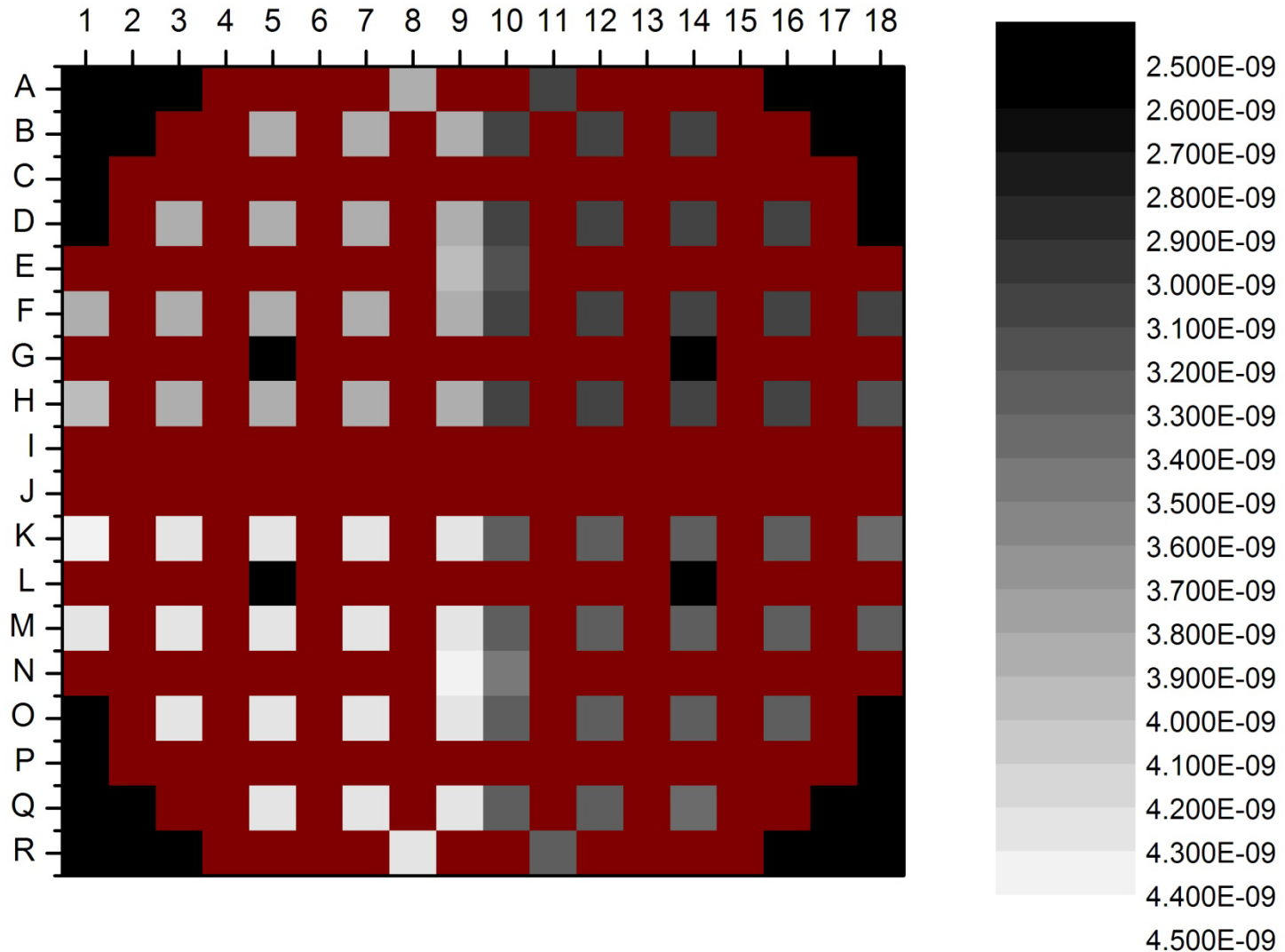
1700 transistors / wafer

80 CAPs / wafer

80 Gated Diodes / wafer

Results

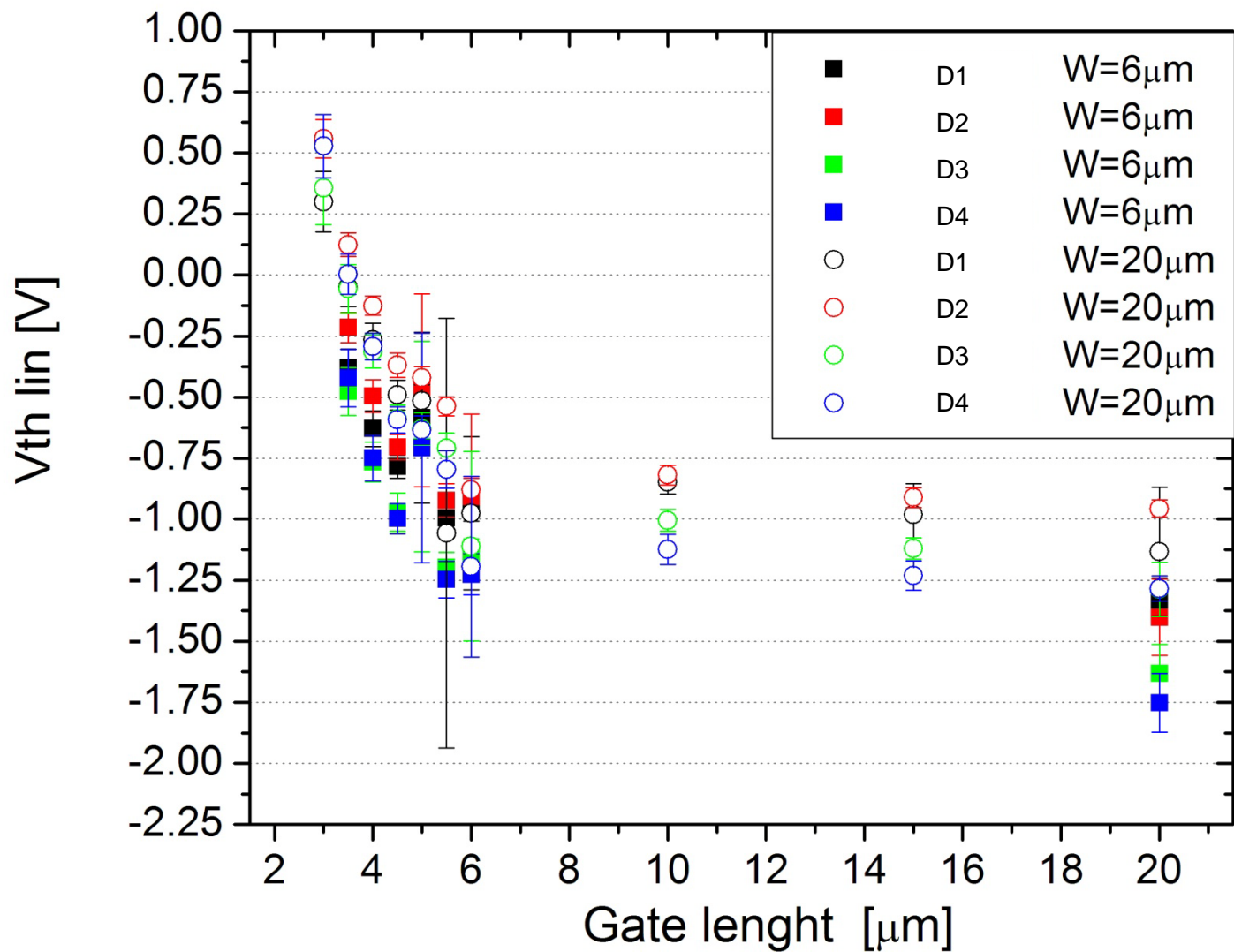
Wafer 6 all Caps



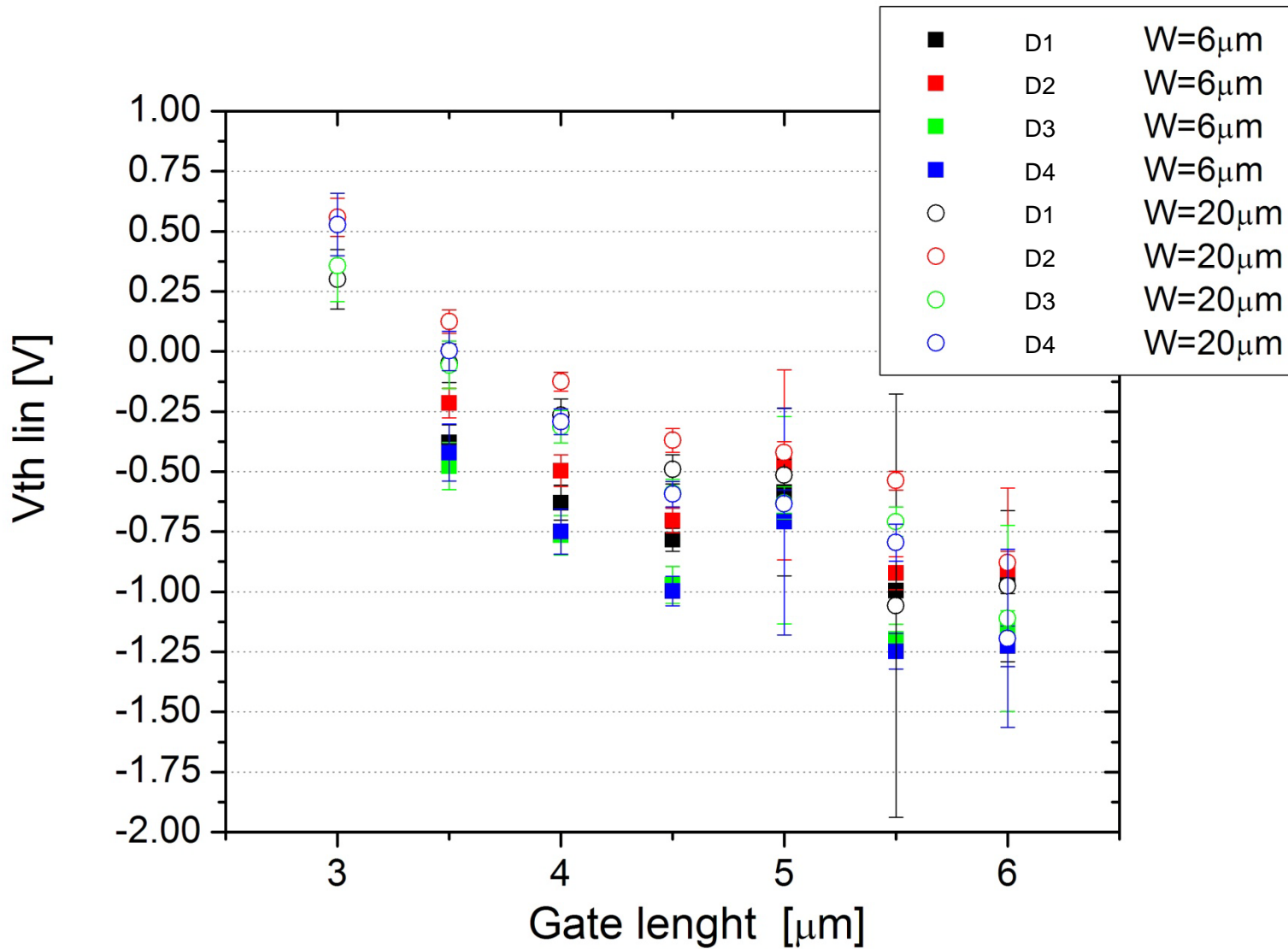
● Results

Ni thickness	Ctot	SD(Ctot)
D1	4.24E-09	2.8E-11
D2	3.84E-09	3.4E-11
D3	3.29E-09	4.1E-11
D4	3.08E-09	3.2E-11

● Results

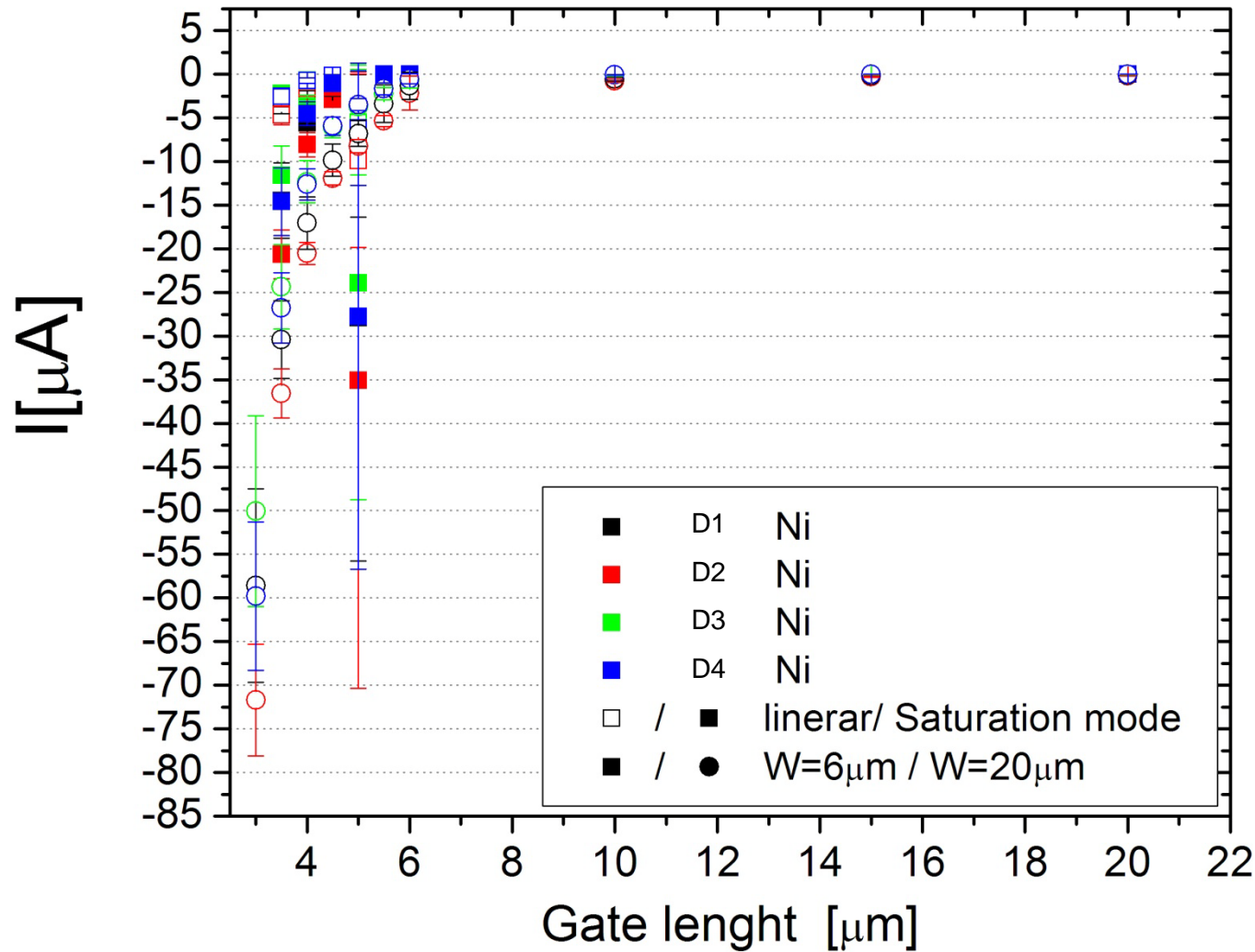


Results



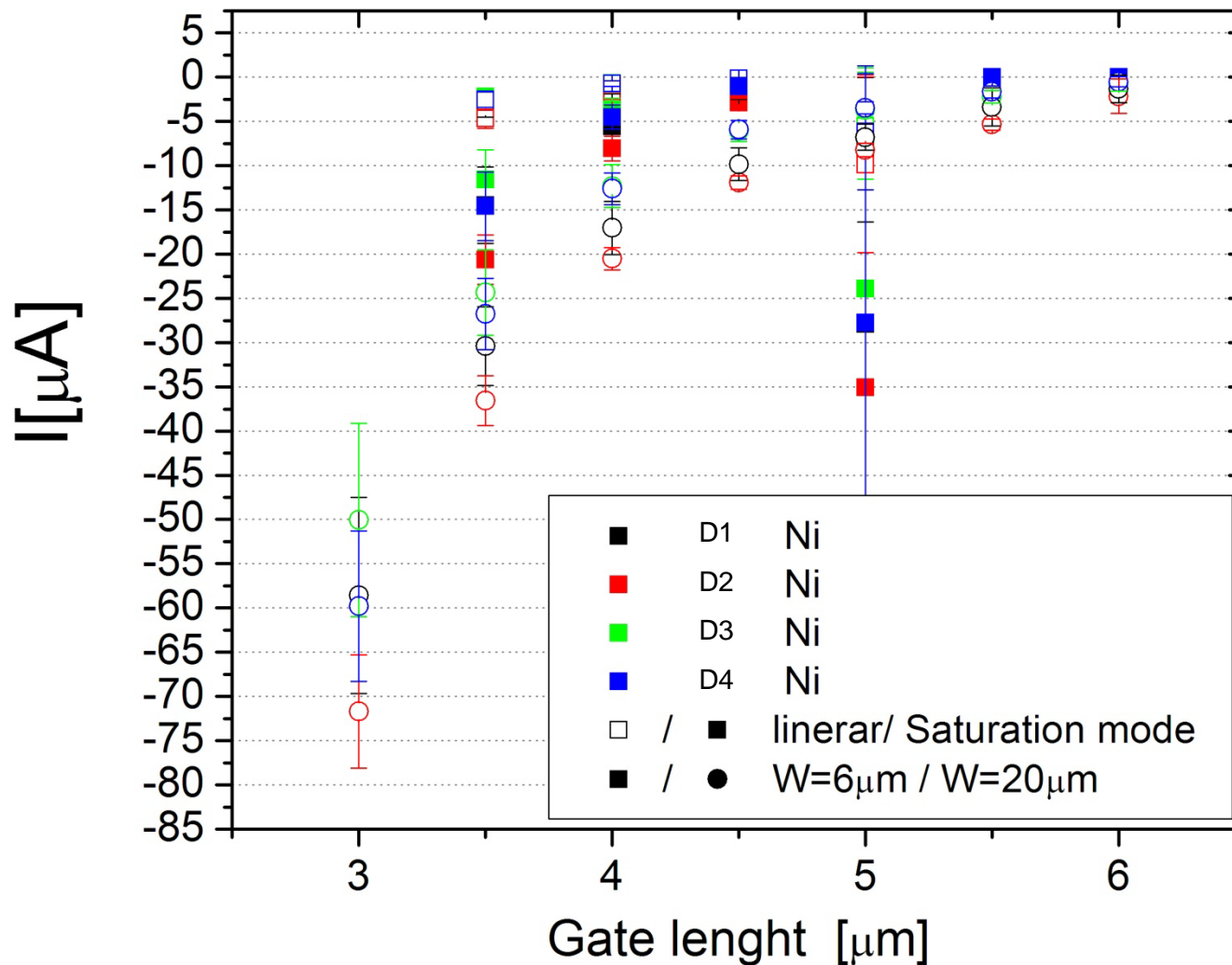
● Results

I @ fixed Gate Voltage -1V

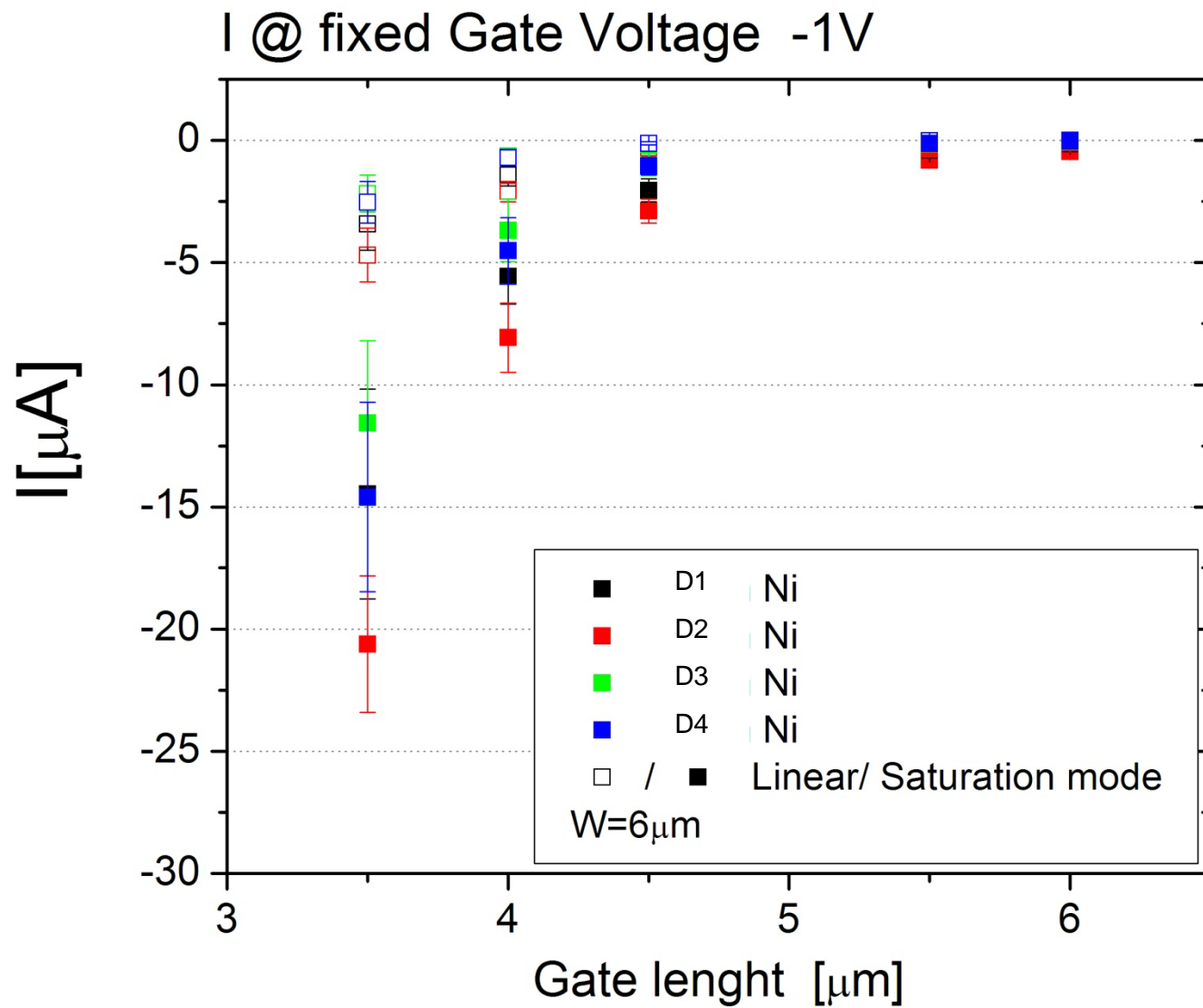


Results

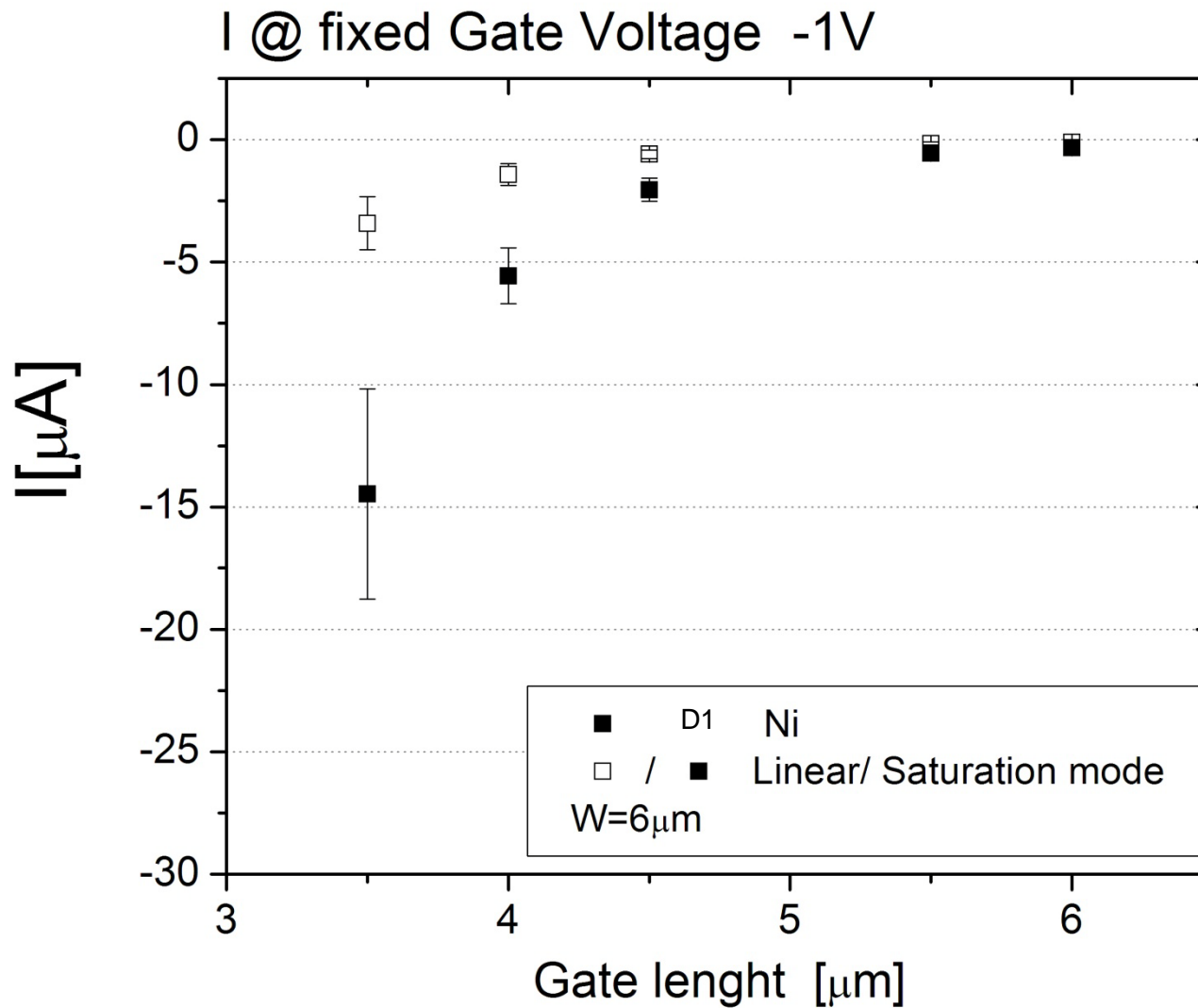
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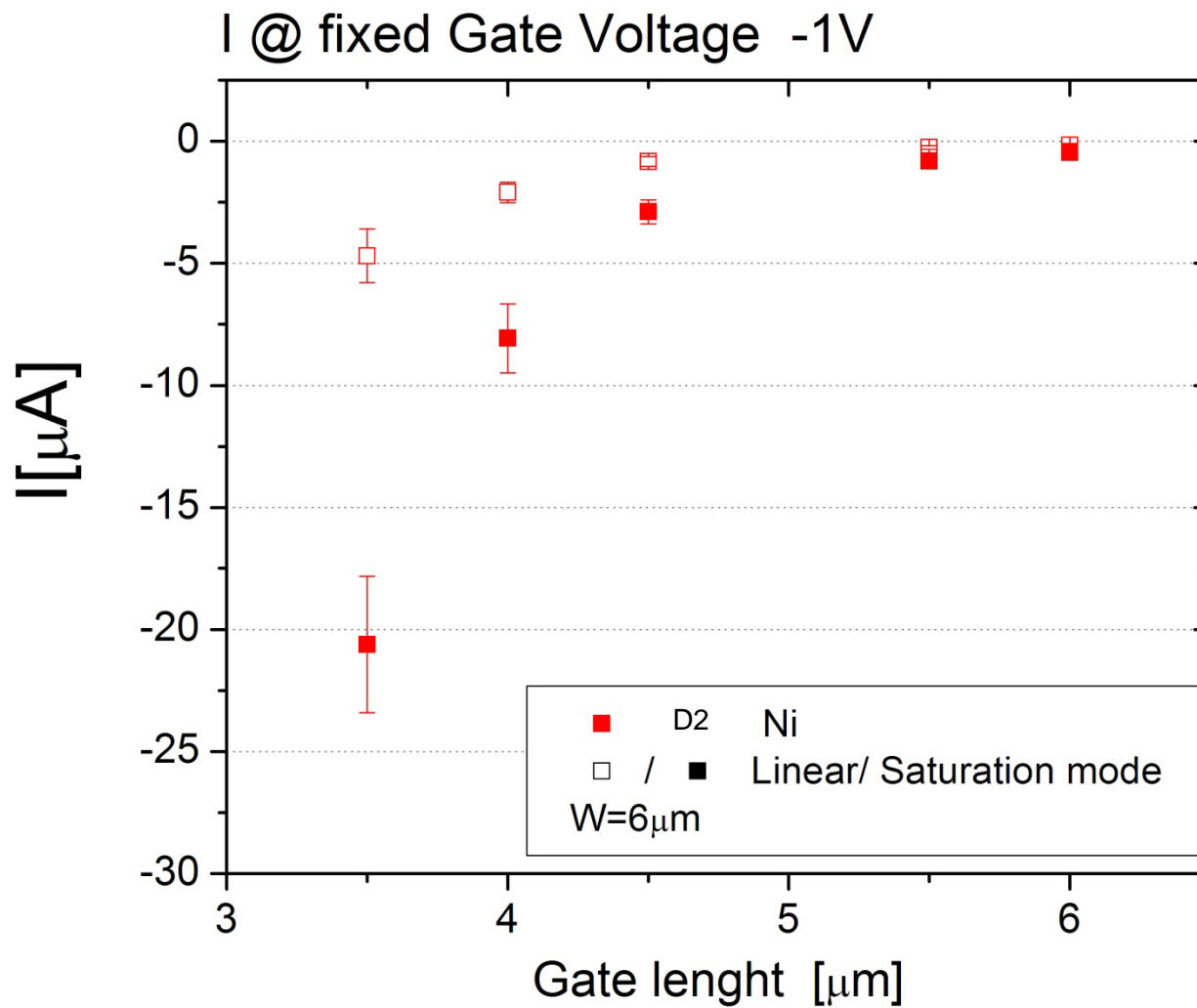
● Results



● Results



● Results



● Results



Still many things to be evaluated