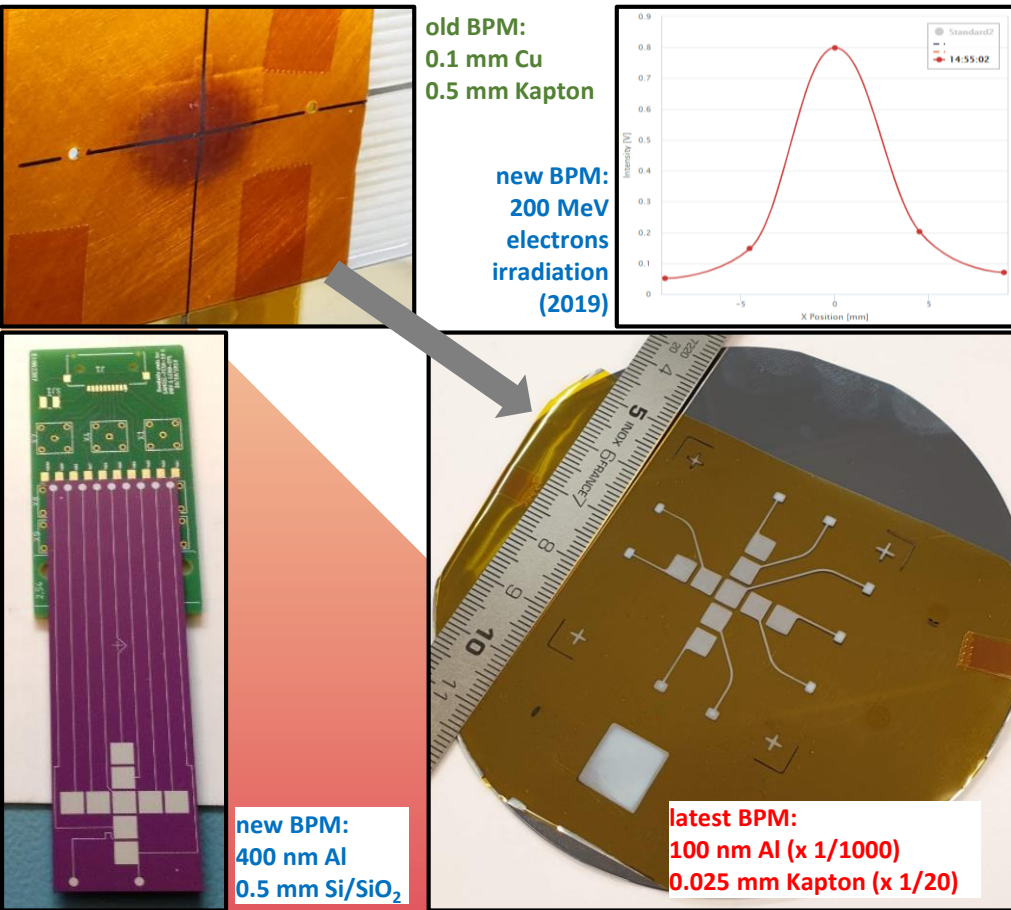


Ultra High-level Radiation Monitoring with Thin Metal Nano-layers (NanoRadMet)

Understand the proprieties of ultra-thin [nm] metal layers (**SEE, Aluminium**) exposed to ultra-high particle fluence levels ($\geq 10^{18}$ p/cm²) to engineer an innovative (simple, non-invasive, low-activation, high-sensitivity, radhard) **beam profile/intensity monitor** (BPM) to be used at CERN-IRRAD (GeV), and possibly at lower energy beam facilities (MeV, keV)



Current status of progress:

% of deliverables completed so far: **60%** (optimization, p⁺ irradiation)

publications: 1 paper submitted + 1 accepted

% of budget spent: **25%** (personnel + fabrication + expt. equipment)

Any remaining uncertainties w.r.t planned deliverables:

- No
- Yes;

Using students (PhD/MSc/BSc) in the project?

- No
- Yes; Viktoria Meskova (TECH: MSc Dem. Uni. of Thrace / EPFL)

Any interactions with other funded ATTRACT projects so far?

- No
- Yes; RaDFOS (irradiations + nano-layers knowhow)

If your project were to be selected for ATTRACT Phase 2:

How would your technology scale up to become an industrial product/system?

Standardize micro-fabrication process on “non-standard” substrates;
Couple the sensor to an optimized DAQ to achieve an integrated, portable & user-friendly system
(existent DAQ fits the CERN infrastructure only).

With who you would need to partner for this to happen? (No names, just profiles of type of organizations)

Micro-technology partner with suitable processing (clean-room) equipment;
Electronic/software partner for DAQ and UI [probably necessary for series production].

Have you already discussed this with KT Group?

No

What applications will you demonstrate with value for science, industry and society? (Examples)

Radiation Test Facilities, Nuclear, Medical (therapy), Industrial (sterilization, materials modification, etc.)

Any comments, remarks or observations you would like to make to CERN?

Need to use funds from CERN budget until July 2020: extension request being prepared