

# *Planned target and material tests at DESY and Mainz*

- *Still ongoing target tests*
- *New grant proposal*
- *Analyses of material*

**Involved people: Sabine, Andriy, Khaled, Wolfgang Hillert, Dieter Lott, Khaled, Kurt Aulenbacher, 2 more PhDs and myself**

# *Target Experiment @ MAMI*

- **E-beam at Mainz: we had already successful runs at 3.5 MeV and 14 MeV**
  - **3/16, 11/16, 1/17, 3/17,..... next run probably begin 2018**
  - **generating similar load as for ILC target within short time**
  - **several targets, different thickness,**
  - **targets survived, but changes in structure: IPAC proceeding**
  - **we also have a set-up to measure the emissivity**
  - **still targets under analyses: detailed laser scanning etc.**
- **stay tuned, interesting results need to be confirmed**

# *New Plans for MAMI*

- **Current grant proposal foresees runs with electrons up to 180 MeV**
  - get required PEDD within short time
  - expect higher rise in  $\Delta T$  ( $\sim 100^0$ - $200^0$ )
  - short-term overloading
- **Precise analysis afterwards:**
  - T-rise, thermic stress
  - structure, hardness, deformation
  - modelling of deformation, cracks etc.
- **Methods:**
  - Laser scanning etc. (started already)
  - synchrotron scattering (new!)

# *New Plans for DESY*

'ex-situ'

- **Using PETRA-3 beam for analyzing material**
  - high-energetic synchrotron radiation of high brilliance: roentgen diffraction
  - $\gamma$ -beam practically no divergence
  - **point-like analysis of material** (beam  $<200\mu\text{m}$ )
  - understanding of micro structure
  - high-energetic radiation (50keV-200keV) allows to analyse material of several mm thickness!
    - exactly what we need,.....
- **Planned: e.g. study different Ti-alloys, which phase, etc.**

# *Further new Plans for DESY*

- **New installation of e-beam at 1-10 MeV**
  - mean current strength of  $\sim 600\mu\text{A}$  (100 Hz)
  - material tests not only with Ti-alloy, also WF
  - design study for shielding
- **Further idea:** use e-beam directly at PETRA-3
  - allows 'in-situ' target tests *'in-situ'*
  - *observe changes in target structures 'online'!*

# *Conclusions*

- Still many ongoing tests at MAMI for our positron target
- New grant application due next Monday!
  - looks promising,.....maybe
  - funding period:2018-2021
- Relevant for target, window, photon dump etc.
- allows further target tests at MAMI at 180 MeV *'ex-situ'*
  - improved analysis via laser scanning + diffraction
- allows new target tests at DESY at 1-10 MeV *'in-situ'*
  - diffraction technique
- *Stay tuned! ...Lots of interesting results are going to happen!*