

# PTB activities for the dissemination of the redefined kilogram



# Si-kg; Disseminating and Maintaining the Kilogram via Si-spheres

Three types of Si-spheres in future

- primary realization  $^{28}\text{Si}$  (PTB)

$$u_{\text{rel}} \leq 2 \cdot 10^{-8}$$

$$\text{RONt} < 10 \text{ nm}$$

< 1 Mio €; *available not before end of 2017*

- quasi primary realization  $^{\text{nat}}\text{Si}$  (PTB)

$$u_{\text{rel}} \leq 3 \cdot 10^{-8}$$

$$\text{RONt} < 10 \text{ nm}$$

~ 0.1 Mio €; *available at 2016*

- secondary realization  $^{\text{nat}}\text{Si}$  (industry)

$$u_{\text{rel}} \leq ? \cdot 10^{-8}$$

$$\text{RONt} < 80 \text{ nm}$$

~ 0.01 Mio €; *available by end 2015*



logo symbolizing:

SI: unit kg

Si: silicon sphere



## Si-kg Research project „SISi“

- European Metrology Project for Innovation and Research (EMPIR) Call 2015 “SI Broader Scope”
- Main focus “dissemination and maintenance of the new kilogram with 1 kg <sup>nat</sup>Si spheres”
  - evaluation of mass stability
  - analysis of robustness of Si-sphere surface
  - improving surface properties such as polishing, etching, surface passivation, ...
  - establishing a metrological infrastructure
  - handling such as cleaning, smooth clamping, shipping, ...
- Partners from NMIs/DIs and industry are invited of participation
- Coordination and contact: [frank.haertig@ptb.de](mailto:frank.haertig@ptb.de)



## **Si-kg Workshop; PTB Braunschweig**

***Wednesday 22<sup>nd</sup> June – Thursday 23<sup>rd</sup> June 2016***

Maintaining and Disseminating the new SI unit kilogram  
via Si-spheres at the highest metrological level

- Lectures and practical handling of Si-spheres on NMI-level
  - cleaning
  - clamping
  - shipping
  - weighing
  - ...
- Attendees: responsible and comparator operators of NMIs/DIs



**Physikalisch-Technische Bundesanstalt  
Braunschweig und Berlin**

Bundesallee 100  
38116 Braunschweig  
Germany



Frank Härtig  
Division 1 "Mechanics and Acoustics"

phone: +49 531 592-1010

email: [frank.haertig@ptb.de](mailto:frank.haertig@ptb.de)

www.ptb.de

02/2015

