Towards the Standardization of Graphene: The Project GRACE

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Nine organizations of different profiles, including National Institutes of Metrology, academic institutions, standardization entities and private companies, has join efforts and are carrying out the Joint Research Project 16NM01 GRACE "*Developing electrical characterisation methods for future graphene electronics*" funded by the European program EMPIR.

The target of the project is comparing and improving methods to characterize electrical properties of graphene and other 2D materials in order to provide input to standardization entities in this field.
The project has two main technical Work Packages which deal with accurate and traceable methods and with high throughput methods, respectively.

WP 1 is devoted to develop accurate testing methods, traceable to the SI. These methods can be contact and contactless methods. Contact techniques include van der Paauw method, in line four probes technique and measurement of S parameters in coplanar waveguide. Contactless methods are, between others, scanning probe microscopy, and microwave and THz based methods.

A basic task of the project is the development of two Good Practice Guides, one for contact methods and the other for contactless techniques.

WP2 deals with high throughput methods, this is, methods with the capability of measuring big quantities of samples in a short time. This is the type of methods typically used in a manufacturing environment. Validation of existing and new methods by comparison with the ones developed in WP1 is another task of the project.

The other two packages of the project are, as usual, one for management and another for Impact creation.

References

1. *Publishable Summary for 16NM01 GRACE* . Available in https://www.euramet.org

Figure

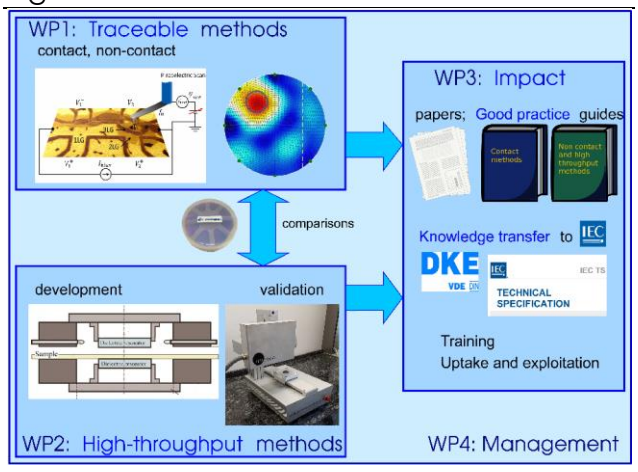

Figure 1: The relationship between the four work packages of the project.