Editorial corner – a personal view

Is the use of correct terms and definitions important in creation of new materials?

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The best example of non-proper use of a well-defined and widely applied term is a case in composite community, where the thermodynamic term ‘*phase*’ is used instead of the term ‘*component*’. Obviously, the misuse of the term ‘*phase*’ is a remnant from the time when the colloid chemistry was formulated (second half of 19th century, i.e. long before the polymer science was defined). The confusion of this misuse can be easily demonstrated by poly(vinylidene fluoride) (PVDF) exhibiting five crystalline polymorphic modifications (phases!) and one amorphous phase but PVDF is still a one-component system.

While this example does not have a direct effect on the creation of new materials, the next one, the definition of the relatively new type of polymer composites, the *single polymer composites* (SPCs), does. SPCs have also been called: *one polymer composites* (R. Porter), *homocomposites*, *self-reinforced composites*, *one-phase composites*, *homogeneous composites*, or *all-polymer composites*. The concept of SPCs has been formulated by R. Porter some 40 years ago (DOI: [10.1007/BF00554928](https://doi.org/10.1007/BF00554928)) as attempt to solve the basic problem in polymer science and technology, namely, the low adhesion quality between matrix and reinforcement due to their different chemical composition. The approach is quite simple – the matrix and the reinforcement have to be of the same polymer, i.e. to be chemically identical. The idea attracted the attention of academia and industry during the last decade when patents were registered and products were commercialized; nanofibrillar SPCs with superior mechanical properties were also created (DOI:

[10.1002/mame.201200226](https://doi.org/10.1002/mame.201200226)). What is more, similar products were prepared and called also SPCs (DOIs: [10.1007/s10853-009-3792-1](https://doi.org/10.1007/s10853-009-3792-1), and [10.1016/j.compscitech.2013.12.006](https://doi.org/10.1016/j.compscitech.2013.12.006)) using highly oriented polypropylene (PP) (as reinforcement) and the random copolymer of PP (usually with polyethylene) as a matrix thus neglecting the basic requirement (R. Porter) for identical chemical composition of matrix and reinforcement. Strictly speaking, such composites belong to the category of polymer–polymer composites. The same holds for thermoplastic copolyesters reinforced with ‘homo’-poly(ethylene terephthalate). The argument that the two chemically different components belong to the same polymer family (DOI: [10.1016/j.compscitech.2013.12.006](https://doi.org/10.1016/j.compscitech.2013.12.006)) could hardly be seriously considered – it only smears the boundary between the two types of composites, the polymer–polymer ones and the SPCs and makes the clear definition of single polymer composites hardly possible affecting in this way negatively their further development! In order to make use of the unique properties of SPCs we should not forget that they could be multi-phase but always remain one-component systems!

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