



MODIFICATION OF THE MATRIX-REINFORCEMENT INTERFACE IN NI-SiC COMPOSITES

**PIOTR JENCZYK^{*†}, DARIUSZ M. JARZĄBEK[†]
AND SZYMON NOSEWICZ[†]**

[†] Institute of Fundamental Technological Research, Polish Academy of Sciences,
Pawińskiego St. 5B; 02-106 Warsaw, Poland

^{*} E-mail address: pjencyk@ippt.pan.pl
URL: <https://www.ippt.pan.pl/en/staff/?osoba=pjencyk>

Mechanical properties of composites depend on matrix, reinforcement as well as their interface performance. For a given material system, one can tailor the properties in manufacturing process.

Spark Plasma Sintering (SPS) is a method to obtain bulk Ni-SiC samples, where their microstructure can be controlled by time, pressure and temperature of process. Those parameters also influence interfacial behaviour [1].

On the other hand, co-electrodeposition (CED) is used for Ni-SiC coatings. In this case microstructure is changed with current mode and its density, temperature or stirring. However, the standard SEM observations show that interface is rather unaffected by those parameters [2].

In this work, we compare matrix-reinforcement interface in Ni-SiC composites prepared by SPS or CED. Additionally, we use a protective layer on SiC particles used for CED to modify the interface in this process.

Results show a significantly different interface depending on process, as well as its different mechanical behaviour.

[1] S. Nosewicz et al. *The influence of spark plasma sintering on multiscale mechanical properties of nickel-based composite materials*, Materials Science and Engineering: A, 891, 146001, 2024

[2] P. Jencyk et al. *Application of SiC particles coated with a protective Ni layer for production of Ni/SiC co-electrodeposited composite coatings with enhanced tribological properties*. Ceram. Int. 45, 23540–23547, 2019