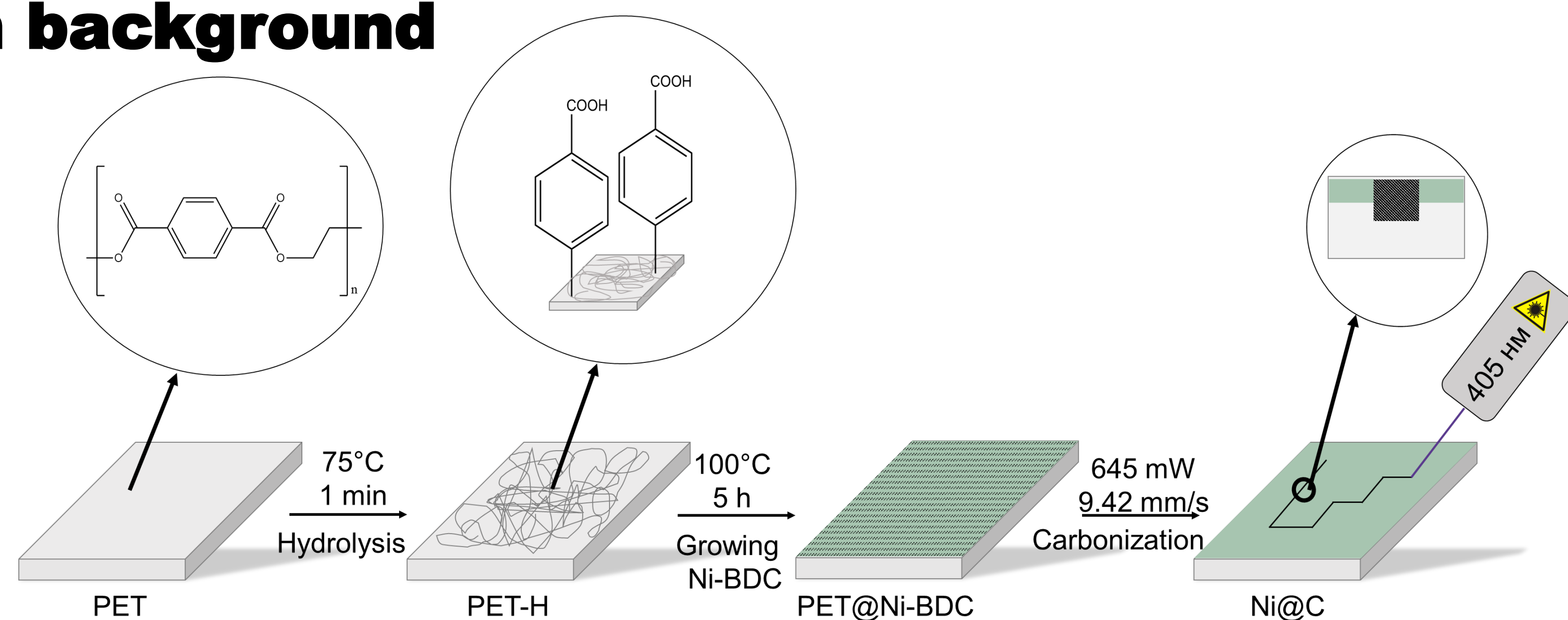
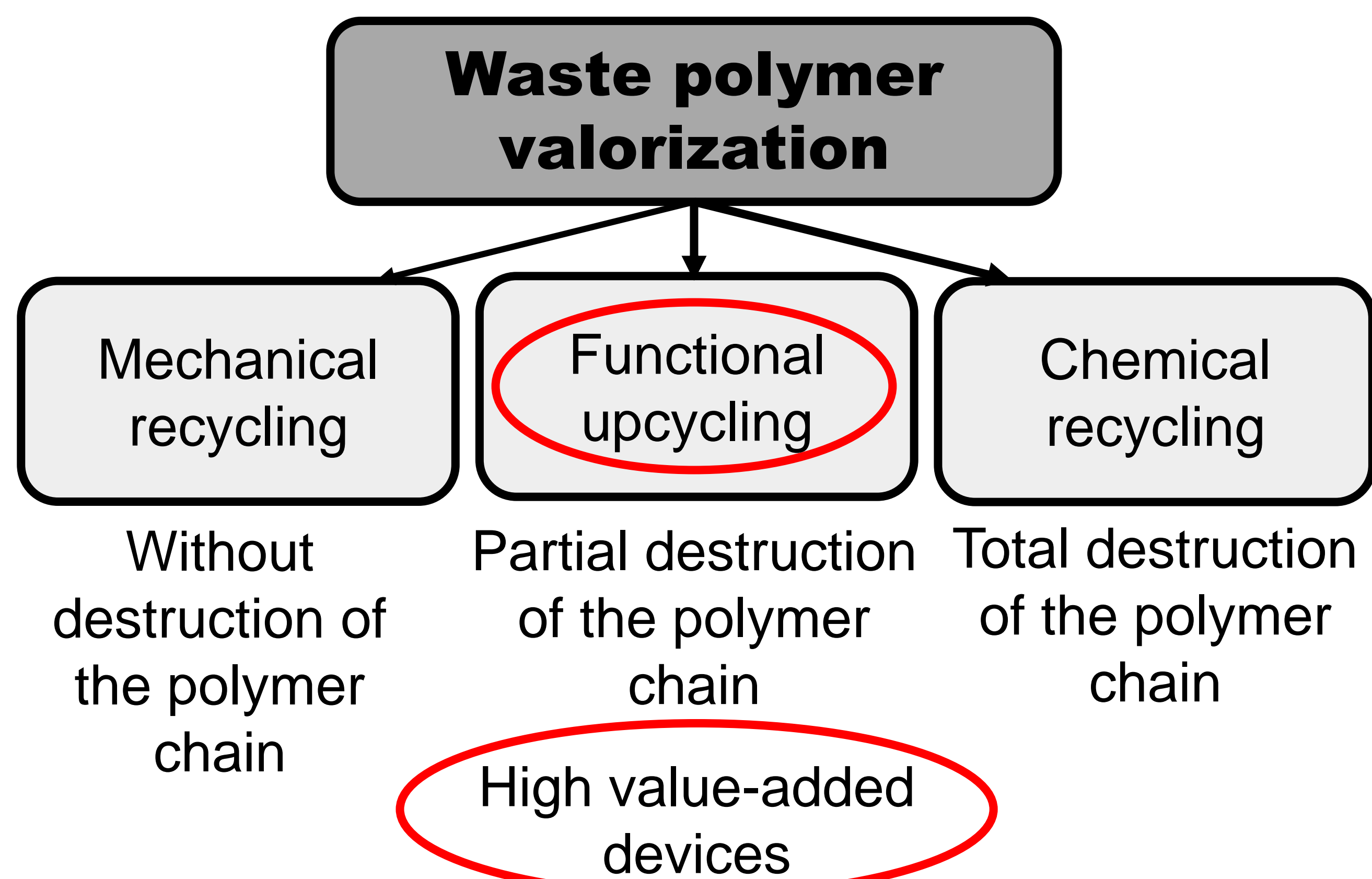


# Laser-Assisted Carbonization of Surface-Grown Ni-BDC towards Waste-Based Smart Materials

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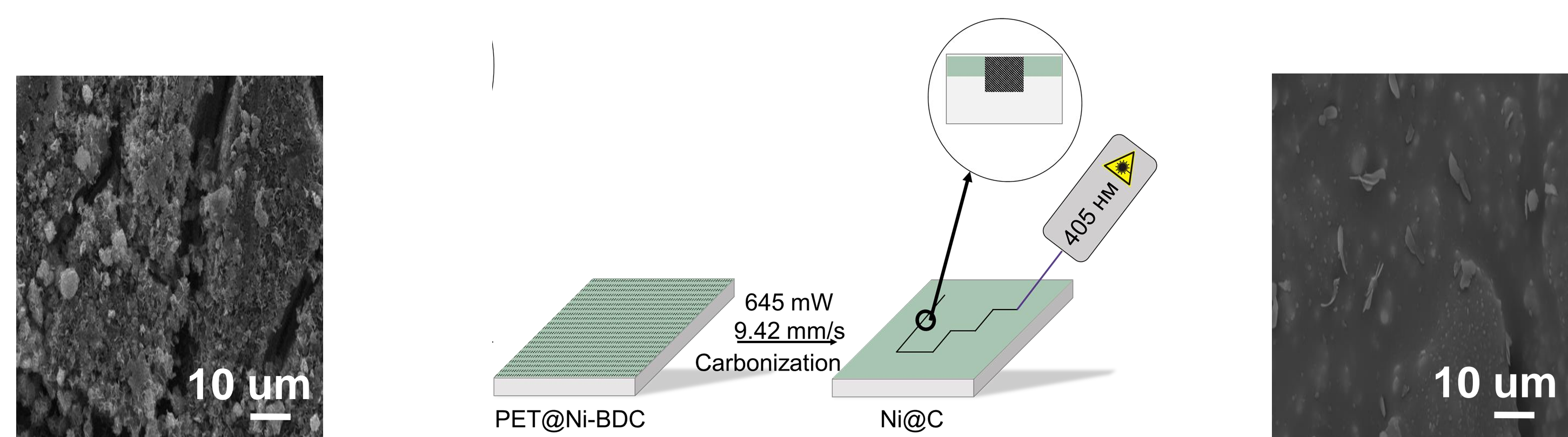
## Research background



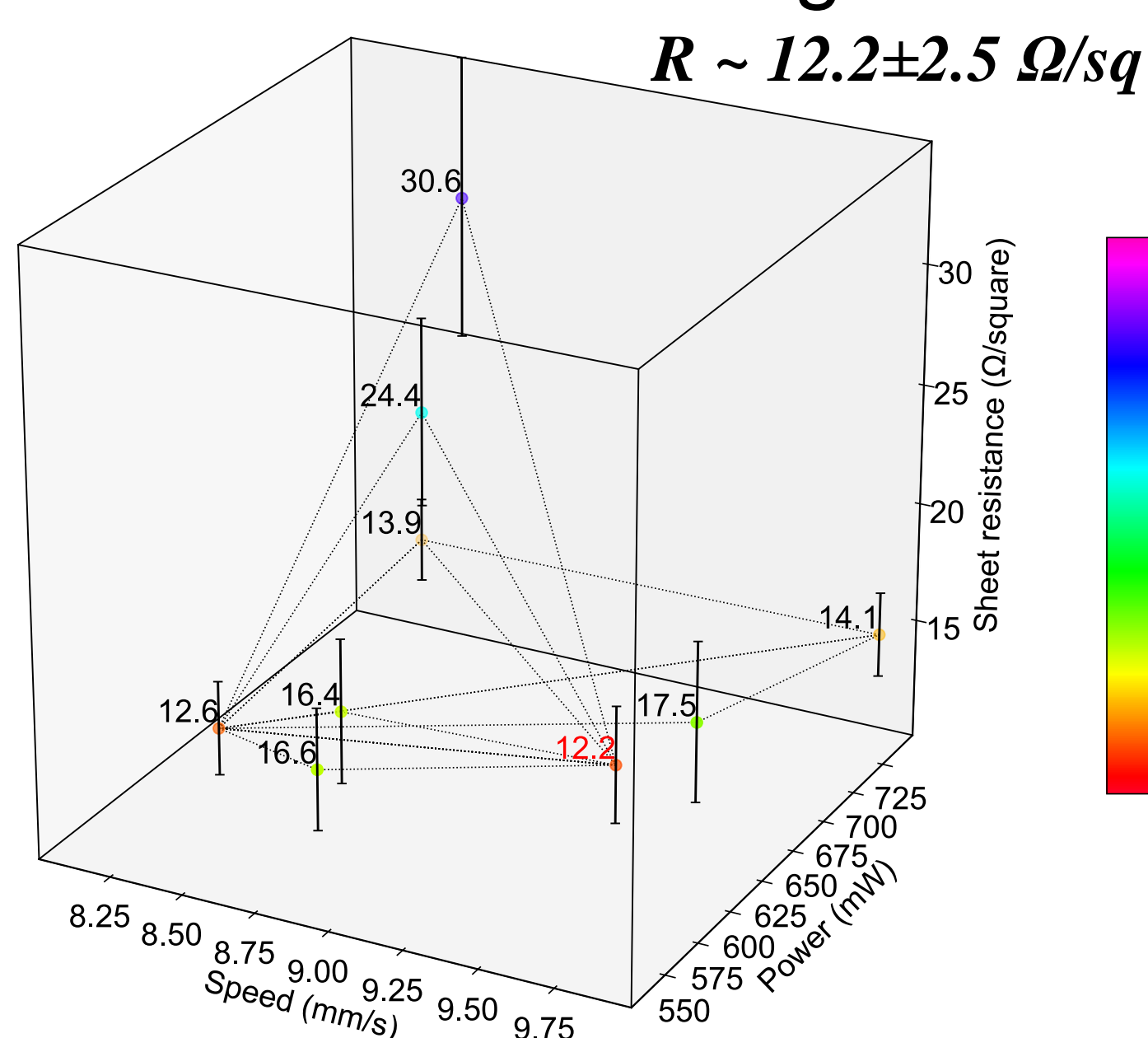
**Aim of project:** the development of novel approaches towards preparation the conductive materials *via* laser-assisted transformations of the metal-organic framework (MOF) Ni-BDC on the surface of waste polyethylene terephthalate (PET) for energy application

Postnikov et al. *J. Mat. Chem. A.*, **2023**, 11, 1108–1115

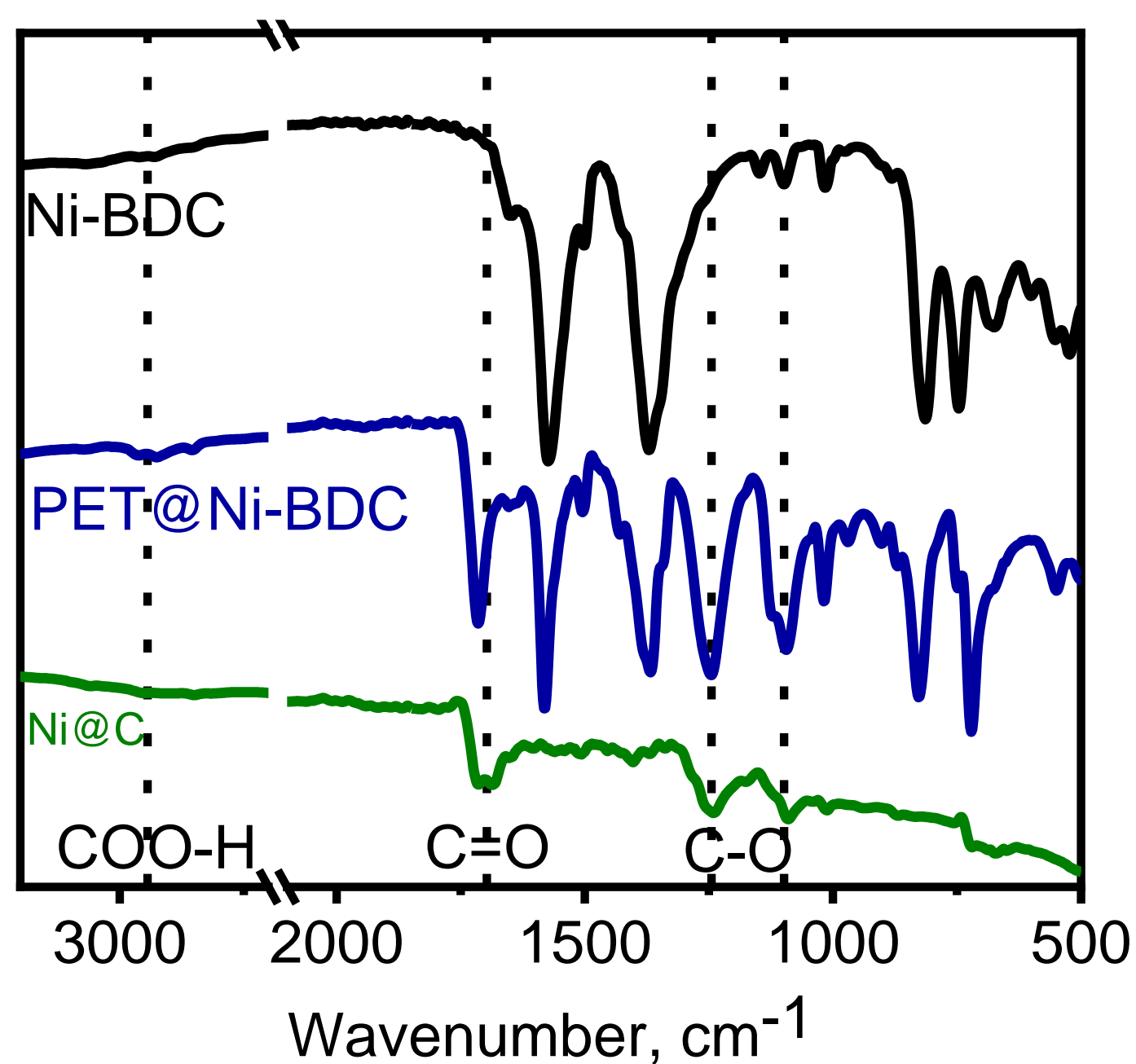
## Characterization



Nelder-Mead's diagram

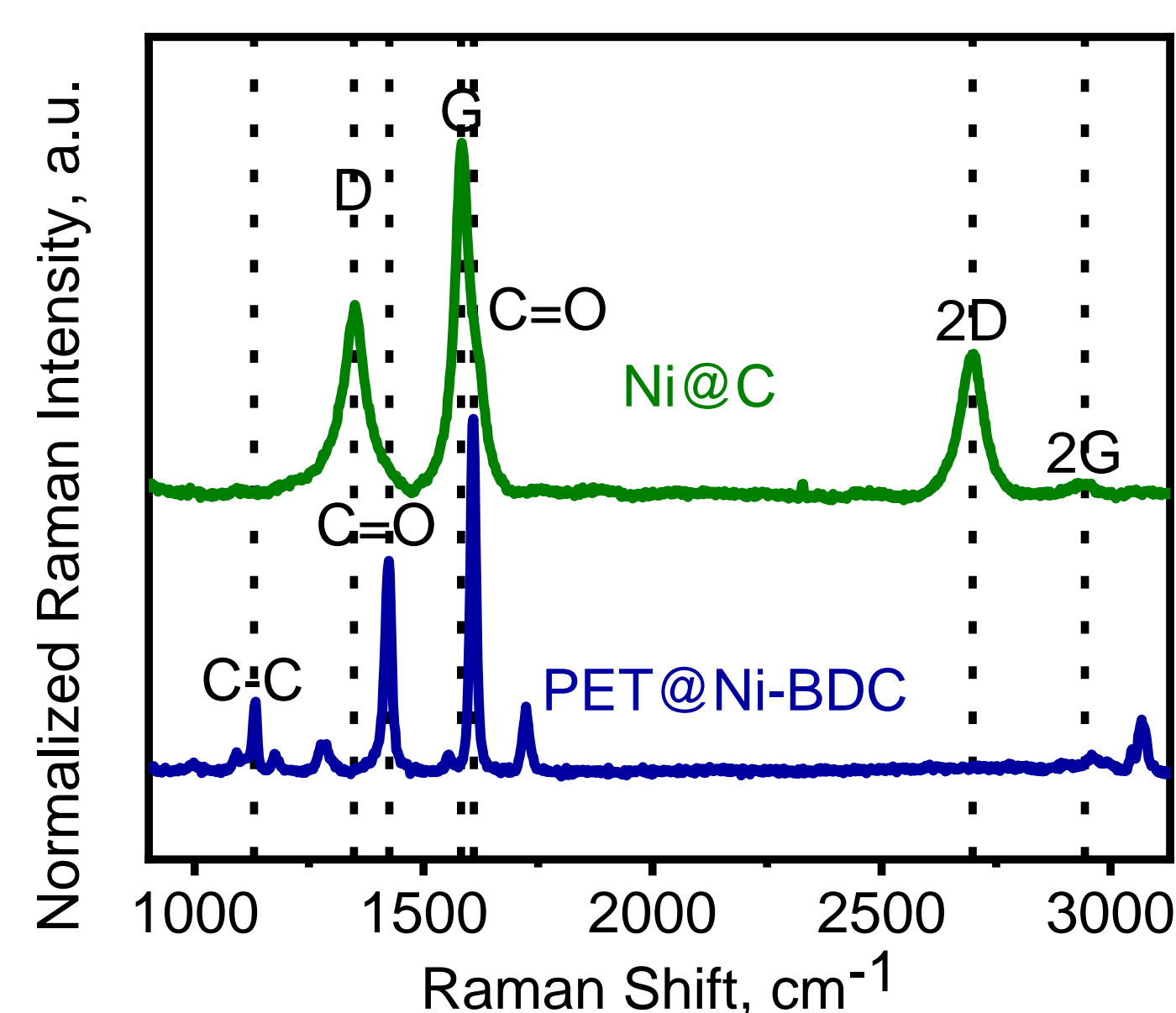


FTIR spectra

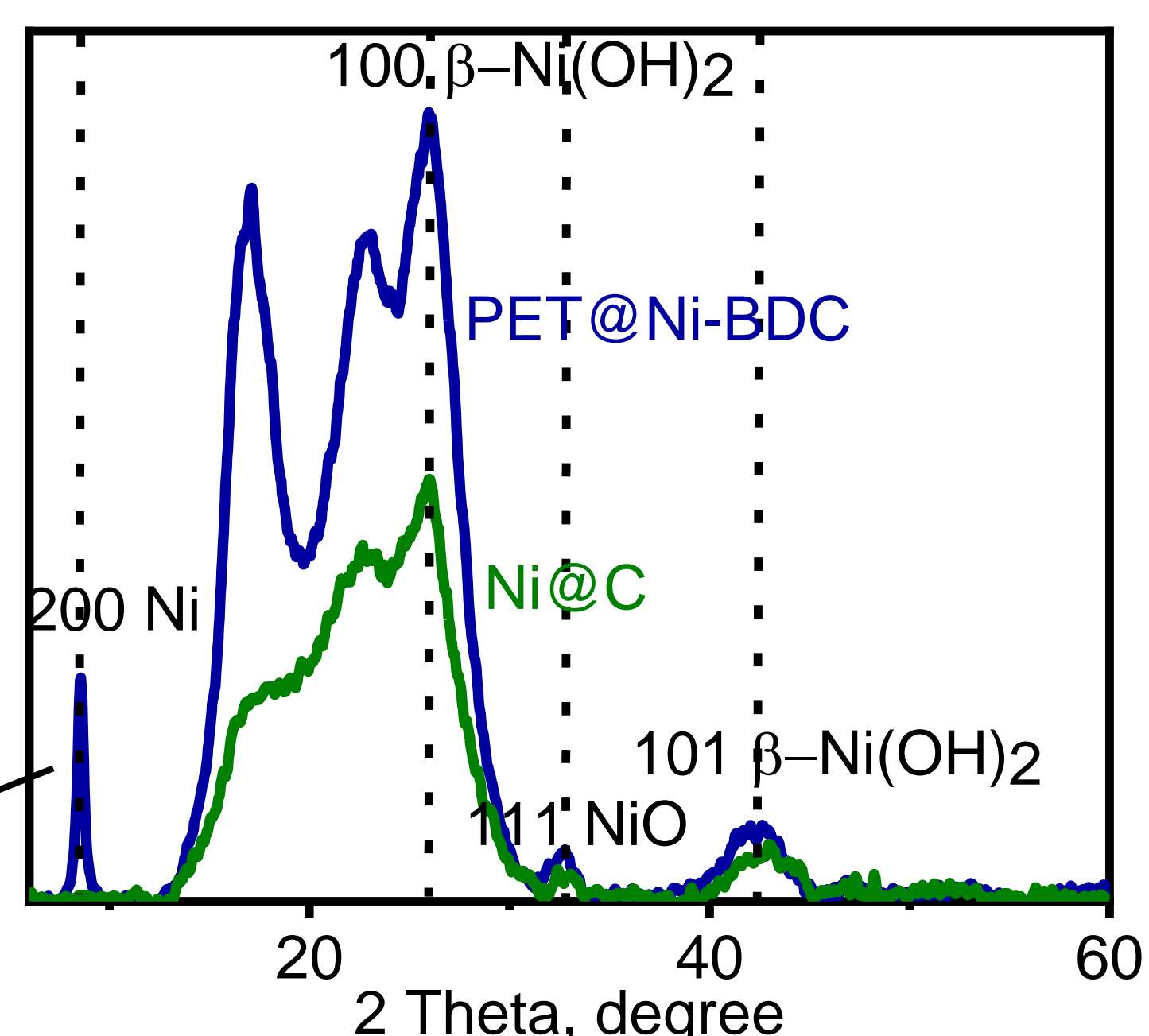


After carbonization the peak Ni from Ni-BDC disappeared

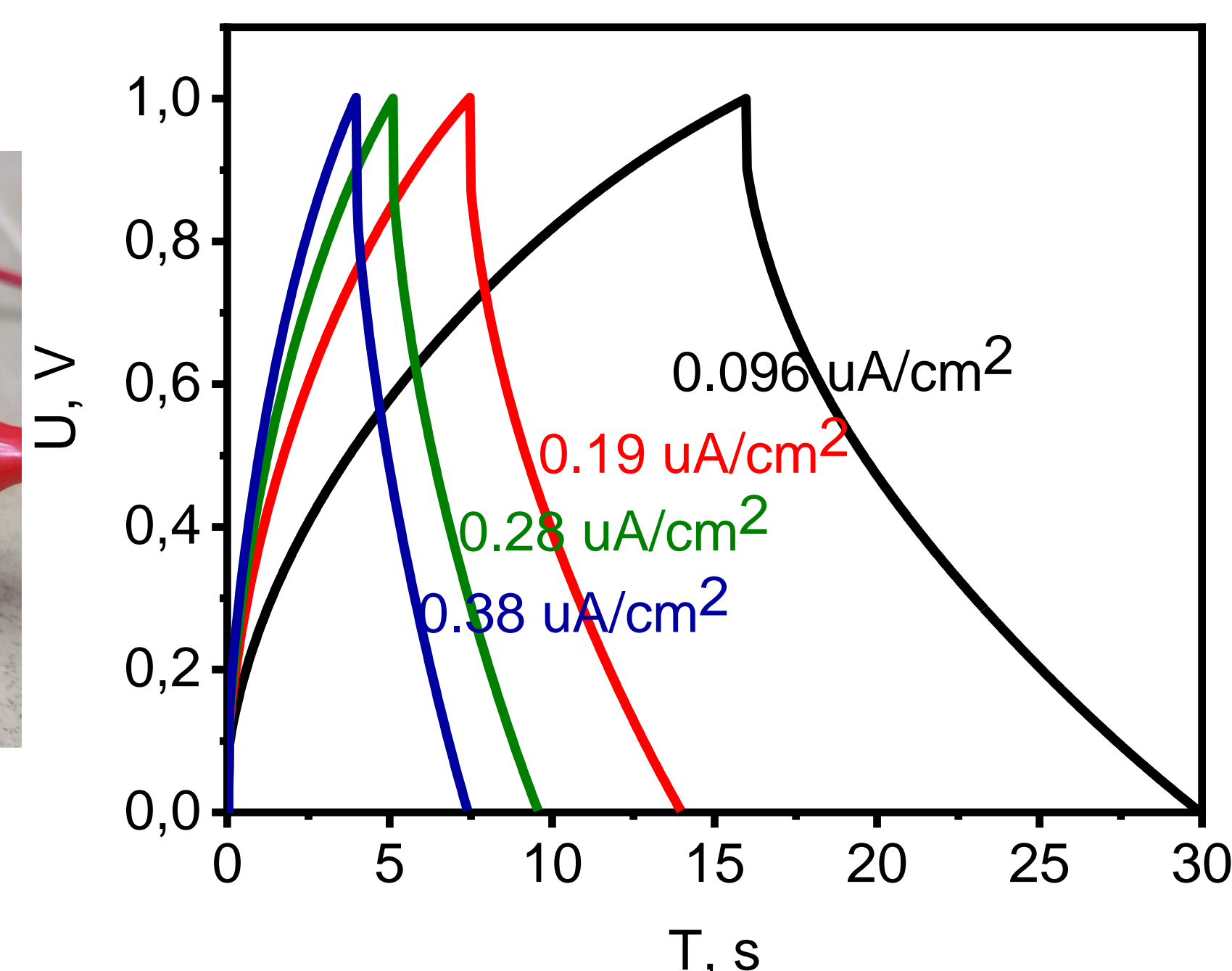
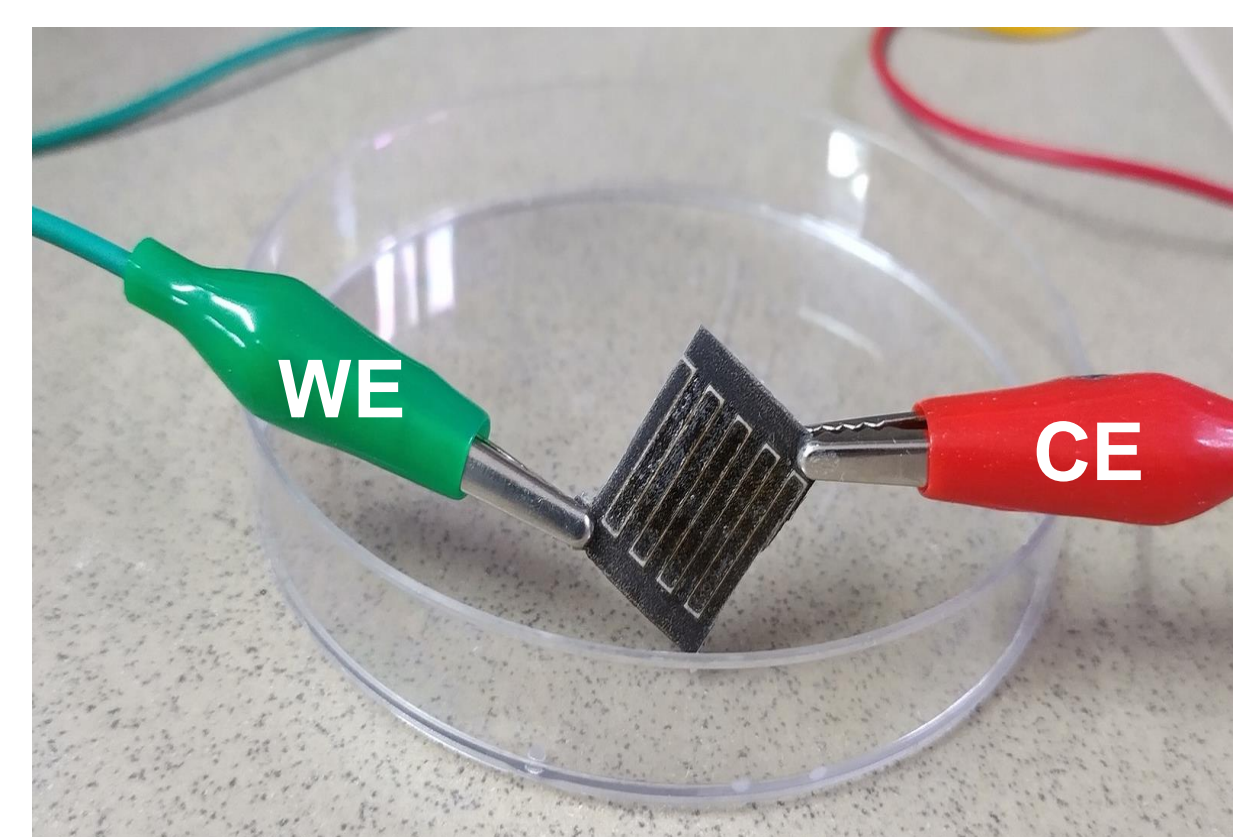
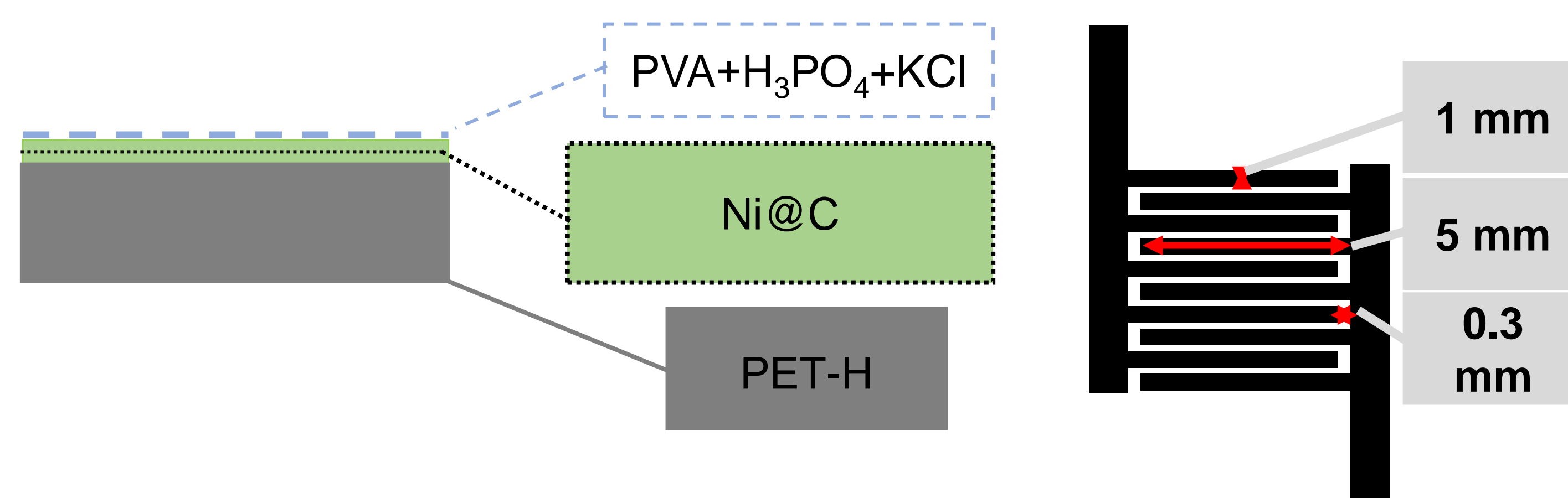
Raman spectra



XRD spectra



## Testing in real conditions



**Conclusion:** the laser-assisted carbonization of waste-PET derived Ni-BDC on the surface of PET wafers led to the formation of robust conductive surface layer demonstrating the high capacitance for the application in supercapacitor design

Specific capacitance Ni@C by GCD-method	
j, uA/cm <sup>2</sup>	C, uF/g
0.096	997.8
0.19	931.1
0.28	956.7
0.38	986.7

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