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Synthesis of nanomaterials by means of pulsed anodic arc discharge¹ CARLES CORBELLA ROCA, SABINE PORTAL, DENIS ZOLOTUKHIN, LUIS MARTINEZ, MICHAEL KEIDAR, George Washington University — Nanoparticles and two-dimensional materials, such as graphene and nanotubes, have been deposited by means of anodic arc discharge in helium atmosphere excited with a square-wave modulated signal. Combination of Langmuir probe diagnostics and optical emission measurements provided plasma parameters of the pulsed discharge. Plasma species dynamics has been described using computational models. The obtained samples were characterized with Raman spectroscopy and scanning electron microscopy (SEM). The structural properties of the nanomaterials synthesized in pulsed arc mode, as well as their growth rates and conversion efficiency of the ablated anode, are compared to reference samples grown in dc continuous arc mode. This deposition method is promising for the fabrication of semiconducting nanomaterials with tuneable electrical and optical properties.

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