



## AUTOMATED SYSTEM “NIKA-3” FOR SINGLE CRYSTAL GROWTH BY CZOCHRALSKI TECHNIQUE

The automated system NIKA-3 is intended for growth wide range of refractory oxide single crystals by the Czochralski technique.

• Heating temperature	up to 2200° C
• Type of heating	Induction
• Crucible diameter	up to 150 mm
• Chamber dimensions (inner), D/H	600/1100 mm
• Crystal weight	up to 5 kg up to 10 kg
• Weight sensor sensitivity	0.02 g
• Upper shaft translation	550 mm
• Rate of upper shaft movement	0,05 mm/h – 100.0 mm/min
• Upper shaft rotation	0.5-50 min <sup>-1</sup>
• Lower shaft translation	200 mm
• Rate of lower shaft movement	0,01 – 100.0 mm/min
• Type of power converter (generator)	IGBT
• Output power of generator	0,1 – 80 kW
• Precision of power control	0,003 kW
• Frequency	5-20 kHz
• Output power deviation	± 0,05%
• Gas pressure in chamber	Up to 1,5x10 <sup>5</sup> Pa
• Limit vacuum in chamber	2.6 Pa 2*10 <sup>-3</sup> Pa
• Pressure of cooling water	180 kPa – 250 kPa



### Equipment advantages:

- Automatic crystal diameter control system which allows automatic tuning of the power regulator during crystallization process. It allows significantly accelerate and reduce the cost of creating technologies for producing single crystals from new materials.
- Highly sensitive and temperature-compensated crystal weight measurement system;
- Precision motors for pulling and rotation of the crystal;
- Vacuum long-stroke bellows for crystal pulling and crucible movement allows to minimize vacuum leakage.
- Multichannel automatic gas supply control system (optional)
- High-contrast video system for supervision of the growing process.
- High stable transistor generator for induction heating.



**YAG**  
Yttrium  
Aluminium  
Garnet



**Nd:YAG**  
Neodymium  
Doped Yttrium  
Aluminium  
Garnet



**YAP**  
Yttrium  
Aluminium  
Perovskite



**Nd:YAP**  
Neodymium  
Doped Yttrium  
Aluminium  
Perovskite



**LuAG**  
Lutetium  
Aluminium  
Garnet



**Yb:LuAG**  
Ytterbium  
Doped Lutetium  
Aluminium  
Garnet



**Nd,Cr:GSGG**  
Neodymium  
And Chromium  
Doped  
Gadolinium  
Scandium  
Gallium Garnet



**Sapphire**  
(Al<sub>2</sub>O<sub>3</sub>)



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