

«APPROVED»
 Head of department
 «High-temperature materials and powder
 metallurgy»
 _____ Stepanchuk A. M.
 “01” 10. 2015

Individual learning plan
 for Masters training (VI course, 2 year of study)
Riabokon Viktoriia Viktorivna

Theme of master's attestation thesis:
**The mechanisms of formation of spherical particles during the metal powder obtaining by
 the cutting method.**

Disciplines of a working curriculum

№	Name of discipline	Amount of hours	Duration	Form of control
1	Philosophical problems of scientific cognition	54	11 sem	Credit
2	Patent engineering and copyright	72	11 sem	Credit
3	Mathematical modeling of systems and processes	108	11 sem	Exam
4	Foreign language for scientists	60	11 sem	Credit
5	Fundamentals of society sustainable development	72	11 sem	Credit
6	Materials for electronic technique	72	11 sem	DCredit
7	Fundamentals of thermal molecular energy and technologies	72	11 sem	Credit

1. The fundamental disciplines of specialty in the field of research

№	Name of discipline	Amount of hours	Duration	Type of studying	Form of control
1	Scientific principles of formation of Composite Materials	162	11 sem	Self	DCredit
1.1	Methods of obtaining spherical powders	54	11 sem	Self	Abstract Credit
1.2	Mechanisms of formation spherical particles during spraying melts	54	11 sem	Self	Abstract Credit
1.3	Mechanisms of formation of spherical particles due to heat generation during the cutting and the oxidation of the material	54	11 sem	Self	Abstract Credit

2. Work on master's attestation thesis

№	Name of work types	Terms	Form of reporting	Marks of scientific adviser
1	Execution of experimental part on the subject of research		Journal of experiments	
2	Processing of experimental data		R&D report	
3	Preparation of qualification work	31.05. 2016	AT, previous defense	
4	Thesis defense at the meeting of SEC	06.2015		

Scientific adviser _____ (DSc. Mazur V.I.)

Undergraduate _____ (Riabokon V.V.)

Scientific principles of formation of Composite Materials

1.1 Methods of obtaining spherical powders

Methods for making powders that provide a spherical particle shape. Methods of spraying melts by liquids and gases, the method of granulation in water and gas-phase methods, methods of centrifugal dispersion using ultrasound, electrical pulse detonation method and methods using electromagnetic fields and electronic evaporation - ion or laser beam.

1.2 Mechanisms of formation spherical particles during spraying melts

The patterns of influence parameters of spraying melts for obtaining spherical shape powder (temperature of melt and temperature of energy source, speed dispersion conditions, cutting geometry, thermal properties of melt and gas-energy source). Determining the time of spheroidization and influencing of size of droplet. Energy balance equation spraying process. The efficiency of spraying process.

1.3 Mechanisms of formation of spherical particles due to heat generation during the cutting and the oxidation of the material

Literary data of formation of spherical particles during the metal powder obtaining by the cutting solid metals. Analysis of energy grinding conditions which promote melting and making spherical particles of powder. Analyze the shapes of materials which were obtained by cutting different materials. Influence of the oxidation process of the formation of spherical particles.