# CURRICULUM VITAE

**Ugrčić Marinko, Ph. D. Professor**, was born on 24th February 1956 in Zrenjanin. The primary school he attended in Sutjeska and High school in Zrenjanin. He graduated in 1981 at the University in Belgrade - Faculty of Mechanical Engineering and started to work at the Military Technical Institute in Belgrade. He obtained the Master of Science degree in 1991 and the PhD in 1995 at the University in Belgrade - Faculty of Mechanical Engineering.

From the beginning of the professional carrier, the main area of his working activities included the research in field of physics of explosion and development of armament and military equipment concerning the projectiles, missile warheads, and armour protection. He has been successfully organized large number of the research tasks in fields of the detonation processes, explosives initiation, and explosive propulsion, shaped charge effect as well as in the field of the terminal ballistics phenomena. Due to the performed research that served as a great basis for development of military techniques, he carried out a lot of development projects like the antitank projectiles, tandem warheads for guided and unguided missiles, explosive reactive armour, electronic time fuze, etc. The science work and practical working experience with permanent enlargement of system-engineering knowledge gave him the possibilities to organize and lead the most complex projects in filed of development and modernization of the complex artillery systems as well.

For many years he was Head of Division of Ammunition and Head of Department for Classical Armament. In April 2005 he becomes Director of the Military Technical Institute.

The professionalism in the work is reason for his membership in the large number of professional committees and scientific councils at the S&R institutions in Serbia. As well, he is member of the European Structural Integrity Society (ESIS).

Since 1991 he has been permanently engaged in education process as honorary teacher at the Military Technical Academy and periodically in the post-graduate education for foreign students at the Faculty of Technology and Metallurgy in Belgrade for subject *Explosives* (section: *Physics of Explosion*). He became the Associate Professor in 2003 for the subjects *Design and Production of Projectiles and Fuzes* and *Missile Warheads and Fuzes*. During 15 years of education work he was supervisor and member of commissions for defence of more master and doctoral thesis.

M. Ugrčić is actual Editor-in-chief of scientific journal *Scientific Technical Review*, published by Military Technical Institute. Also, he is author of 3 patents as well as the author or co-author of 3 textbooks and more then 90 scientific and engineering papers. He was awarded the special recognition of Military technical institute for the best paper published in journal *Scientific Technical Review* for the period 2003 - 2004.

**Management of the Researching and Development (R&D) projects**

During the professional work, he has been coordinator and organiser of the large number of the R&D projects and subprojects, as follows:

1. Researching of the rotation influence on the shaped charge effect.
2. Researching of the possibilities of detonation wave shaping.
3. Researching of the interaction of the shaped charge and explosive reactive armour.
4. Researching of the possibilities of the projectile design with tandem warhead.
5. Development of the 120 mm Shaped charge warhead for RBR M91.
6. Modelling of the 32/120 mm Tandem warhead.
7. Development of the Explosive reactive armour.
8. Development of the 136 mm Tandem warhead for SPOVR BUMBAR.
9. Development of the Electronic time fuze for artillery ammunition from 105 to 155 mm.
10. Development of the 105 mm upgraded Howitzer M56/33.
11. Development of the 105 mm Ammunition with extended range projectile with hollow ending shape, 105 mm HE ER.
12. Development of the 105 mm Ammunition with extended range projectile with base bleed, 105 mm HE ER-BB.
13. Development of the Functional model of the self-propelled artillery system 155 mm with 52 cal. long gun barrel on the terrain vehicle 8x8, FAP-2832 (NORA-B52).

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***Books and survey papers – $R_{20}$***


1. Petrović, S., Blagojević, M., Ugrčić, M.: "*Explosives*", *Chapter 3 - Physics of explosion*, Faculty of technology and metallurgy, Belgrade, 1996.
2. Ugrčić, M.: "*Explosives and physics of explosion - explosive characterization and acceptance testing methods with resolved examples*", Faculty of technology and metallurgy, Belgrade, 1997.
3. Ugrčić, M.: "*Calculating exercises with theoretical abstracts – Conventional projectiles design*", MA, Belgrade, (prepared for publishing in Serbian)


***Technical issues – $R_{30}$***

**New products**


1. Ugrčić, M.: "*Antitank weapon of short range 120 mm RBR, M91 – Shaped charge warhead 120 mm, M91*", Final product, 1991.
2. Lukić, M., Ugrčić, M.: "*Explosive reactive armour M99*", Final product, 1998.
3. Ugrčić, M., Mitrović, M.: "*Upgraded Howitzer105 mm M56/33*", Final product, 2004.
4. Ugrčić, M.: "*105 mm Ammunition with extended range projectile with hollow ending shape, 105 mm HE ER*", Final product, 2003.
5. Ugrčić, M.: "*105 mm Ammunition with extended range projectile with base bleed, 105 mm HE ER - BB*", Final product, 2004.


**Upgraded technologies involved in production**


1. Ugrčić, M.: "*Tools set Ø 20, 30, 40, and 50 mm for compressibility testing of explosive materials*", Special equipment for characterisation of the explosive materials, 1987.
2. Ugrčić, M.: "*Special tool for producing the generator of plane detonation wave and implosion process*", 1988.
3. Ugrčić, M., Mihelič, B.: "*Equipment for remote tempered vacuum iso-static pressing of explosive materials*", 1989.
4. Ugrčić, M.: "*Generator of the plane and conical detonation wave*", (with the set of tools for production), 1990.


**Prototypes and software**


1. Ugrčić, M.: "*Equipment for static testing of the rotation influence on the shaped charge effect*", VTI-02-23-329, VTI, 1985.
2. Ugrčić, M.: "*120 mm Shaped charge – casting variant*", VTI-02-01-0172, VTI, 1991.
3. Ugrčić, M.: "*32/120 mm Tandem warhead*", TD-VTI-02-01-, 1997.
4. Ugrčić, M.: "*Program code ERA*". The program code is attended for calculating the interaction parameters of the shaped charge and explosive reactive armour. As well, it offers possibilities to numerical simulation of destructive effect of explosive reactive armour on the shaped charge, where the gas-dynamic influence of detonation products and kinematic

erosion on moving armour plates, as negative factors, cause the hard increasing of the shaped charge penetrability; 1995.

5. Perić, T., Ugrčić, M.: "*120 mm Horizontal antitank mine, PTMHD*", Prototype, 1988.
6. Ugrčić, M.: "*55/136 mm Tandem warhead* ", Prototype, TD-VTI-300-000-00, 2000.
7. Mitrović, N., Ugrčić, M.: "*FM of self-propelled artillery system 155 mm with 52 cal. long gun barrel on the terrain vehicle 8x8, FAP-2832*", Functional model, 2004.

***Patents – $R_{40}$***

1. Ugrčić, M.: "*Time-delay generator with self-destruction for projectiles with tandem warhead*", Registered patent P-102/97;
2. Ugrčić, M.: "*Demolition warhead with multi-radial cutting-blades for anti-aircraft rocket missile*", Protected patent, 2000;
3. Ugrčić, M.: "*Double-fragment demolition projectile*", Registered patent P-120/98.

***Paper of international importance – $R_{50}$***

1. Ugrčić, M.: "*Modeling and Simulation of Interaction Process of Shaped Charge Jet and Explosive Reactive Armour*", International Conference EXPLOMET'95, El Paso, Texas-USA, 1995. 511-518;
2. Ugrčić, M.: "*Determination of the critical jet velocity during the penetration into the homogenous steel obstacle*", Series Mechanics, Automatic control, and Robotics, Facta universitatis, Vol. 3. N$^{o}$15, Niš, 2003. 981-988;
3. Ugrčić, M.: "*The Contribution to the Optimization of Detonation Wave Profile in the Shaped Charge Construction*", 19$^{th}$ International Symposium on Ballistics, 19$^{th}$, Interlaken, Switzerland 2001. 773-781;
4. Ugrčić, M.: "*The Study of the Use Possibility of the Semi-Destructive Method for the Shaped Charge Quality Testing*", 20$^{th}$ International Symposium on Ballistics, Orlando, Florida-USA 2002. 635-643;
5. Ugrčić, M., Drašković, Z.: "*Review - 6$^{th}$ Symposium on Nonlinear Mechanics - nonlinear sciences and applications*", Series Mechanics, Automatic control, and Robotics, Facta universitatis, Vol. 3. N$^{o}$15, Niš, 2003. 183-19;
6. Ugrčić, M.: "*Ballistic Sensitivity of the Explosive Reactive Armour*", 22$^{nd}$ Symposium on explosive materials with international participation, JKEM 2004, Montenegro, Bar, 2004.
7. Ugrčić, M., Blagojević, M., Džingalašević, V.: "*Experimental Researching of the Ballistic Sensitivity of the Explosive Reactive Armour*", 22$^{nd}$ Symposium on explosive materials with international participation, JKEM 2004, Montenegro, Bar, 2004.
8. Ugrčić, M: "*Correction of Detonation Wave Profile on Shaped Charge Peripheral Zone*", 14$^{th}$ International Autumn Seminar on Propellants, Explosives and Pyrotechnics, 2005IASPEP, Beijing, China, 2005.
9. Ugrčić, M., Dimitrijević, D.: "*Kill Probability of Armoured Targets by Firing the Airborne Antitank Warfare Systems*", 1$^{st}$ Conference NACORT, National Committee of Range Testing, Air Range Testing centre, Chandipur, INDIA, 2006.
10. Ugrčić, M.: "*Clock Mechanism as Base of Artillery Safety and Arming Devices*", 16$^{th}$ European Conference of Fracture (ECF16), Alexandroupolis, Greece, 2006.
11. Ugrčić, M.: "*Some characteristics of arming process depending on design parameters of SAD*", 2$^{nd}$ World Congress in Mechanism and Machine Science (IFToMM 2007), Besançon, France, 2007.

***Paper of national importance – $R_{60}$***

**Papers published in the national journals**

1. Ugrčić, M.: "*Contribution to the general method of the experimental researching of the shaped charge effect with special attention on the experimental researching of the rotation influence on the shaped charge penetrability*", Scientific Technical Review, Vol. XXXIX, Num. 7, 1989; 27-34, (in Serbian);
2. Ugrčić, M.: "*Testing of the transformation of the shape and velocity of the detonation wave in the shaped charge with hemispherical wave shaper*", Scientific Technical Review, Vol. XL, Num. 8-9, 1990; 49-57, (in Serbian);
3. Ugrčić, M.: "*Regularity of shaped charge jet forming process and optimisation of the detonation wave*", Scientific Technical Review, Vol. XLIII, Num. 1, 1993, 3-11, (in Serbian);
4. Ugrčić, M.: "*Numerical analysis of the interaction process of the shaped charge and explosive reactive armour*", Scientific Technical Review, Vol. XLVI, Num. 6, 1996; 3-8, (in Serbian);
5. Blagojević, M., Ugrčić, M., Petrović, S.: "*Computation of detonation parameters of the casting explosives based on the octogen*", Chemical Industry, Vol. L, Num. 3, Beograd, 1996; 103-112, (in Serbian);
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14. Krstić, T., Ugrčić, M.: "*Computer Simulation and Experimental Testing of the Clock Safety and Arming Device Function*", Scientific Technical Review, Vol. LV, Num. 2, Belgrade, 2005.
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14. Ugrčić, M.: "*Transformation of the shape and detonation velocity in the shaped charge with wave shaper*", Book E, 18. Symposium on explosive materials JKEM, Kupari, 1990; 185-193, (in Serbian);

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18. Ugrčić, M.: "*Horizontal antitank mines*", Vojska, Belgrade, 1994; 31-33, (in Serbian);
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