

Prof. dr. sc. Marta PLAVŠIĆ (rođ. JURKOVIĆ)

Rođena: 29.01.1952. u Zagrebu,

Znanstveno zvanje: znanstvena savjetnica u trajnom zvanju, naslovni redoviti profesor

Adresa: Zavod za istraživanje mora i okoliša, Institut "Ruđer Bošković", Zagreb,

tel.01 4680127; plavsic@irb.hr

- Osnovnu školu i gimnaziju (III gimnazija) polazila sam u Zagrebu. Maturirala sam šk. god 1969/70. Iste godine upisala sam Kemijsko-tehnološki odjel Tehnološkog fakulteta Sveučilišta u Zagrebu. **Diplomirala sam 1975**, i stekla titulu **dipl. inž. kemijske tehnologije**. Godine 1976. zaposlila sam se u Centru za istraživanje mora(CIM), Zagreb, Instituta Ruđer Bošković (IRB) i upisala postdiplomski studij (Sveučilište u Zagrebu, PMF, Oceanologija). **Magistarski rad pod naslovom "Voltametrijsko određivanje stvaranja kompleksa tragova teških metala u morskoj vodi" obranila sam 1980** . Kao znanstveni asistent sa magisterijem nastavljam rad problemima karakterizacije organske tvari i tragova teških metala u prirodnim vodama elektrokemijskim metodama. **Disertaciju pod naslovom "Istraživanje interakcije bakar (II) iona, organske tvari i raznih površina u kloridnim otopinama i morskoj vodi" obranila sam 1987. godine** , na IRB-u, Sveučilište u Zagrebu, i stekla titulu doktora prirodnih znanosti iz područja kemije. Kao viši asistent nastavljam rad u CIM-u Zagreb, IRB.
- **U zvanje znanstvena suradnica izabrana sam 1991.**
- **U zvanje više znanstvene suradnice izabrana sam 1998. ( reizbor 2003);**
- **2005. izabrana sam u zvanje znanstvena savjetnica,**
- **2010. izabrana sam u trajno zvanje –znanstvena savjetnica na IRB .**
- **2017. izabrana sam u naslovno znanstveno-nastavno zvanje redovitog profesora ( Sveučilište u Zagrebu, PMF, Interdisciplinarne prirodne znanosti, Oceanologija )**
- **Usavršavanja:**
  - 1988. godine boravila sam u Holandiji u Den Helder-u gdje sam učestvovala u radu International TNO - Speciation Workshop. Rad se odnosio na karakterizaciju površinsko aktivnih organskih tvari koje su nastale za vrijeme cvata fitoplanktona u modelnom ekosistemu.
  - U lipnju 1989. boravila sam na stipendiji British Council-a u Vel. Britaniji na University of Liverpool, Department of Oceanography gdje sam sa kolegama iz Engleske radila na problemima specijacije organske tvari i tragova metala u prirodnim vodama.
  - Suradnju sa Velikom Britanijom, Oceanographic Laboratories, University of Liverpool, nastavila sam u okviru ALIS projekta preko Britanskog Savjeta i Ministarstva znanosti (1993 - 1996). Boravila sam tamo u više navrata po mjesec dana i radila na istraživanju folne kiseline u prirodnim vodama.
  - U više navrata boravila sam na National and Kapodistrian University of Athens, Greece, zbog rada na zajedničkim projektima ili predavanja ( razdoblje 1998- 2004 ).
  - U studenom 2006.g. boravila sam na Alfred Wegener Institute for Marine and Polar Research, Bremerhaven , Germany, u sklopu projekta suradnje preko DFG-a.
  - Kraći boravci na University of Tromsø, Norway, u okviru dva projekta suradnje sa Norveškom (2001-2004) i (2006-2009).
  - U veljači 2015, boravak u Laboratory for Environmental Chemistry, University of Athens, Greece, suradnja na projektu „ARISTEIA“, primjena elektrokemijskih metoda u istraživanjima mora i okoliša .
- **Uvodjenje novih problematika, razvoj i uvođenje novih metoda i tehnika :**
  - 1. Razvila sam metodu za određivanje kapaciteta kompleksiranja sa ionima bakra (kadmija i olova) u uzorcima morske vode, koja se od 1978. godine koristila za potrebe ekoloških studija rađenih u Zavodu za istraživanje mora i okoliša, Zagreb .
  - 2. Unaprijedila sam metodu za određivanje vitamina iz B-grupe, folne kiseline koja ima važnu ulogu u prirodnim sustavima korištenjem voltametrijske tehnike, koja je primijenjena u ispitivanju uzorka jezera Rogoznice i Sjevernog Jadrana.

- 3. Radila sam ispitivanja karakteristika organske tvari granici faza mineralne površine/Hg/-morska voda te njihovih interakcija sa ionima metala koja su primjenjena u istraživanjima prirodnih voda.
- 4. Započela sam kompleksna istraživanja polisaharida i transparentnih egzopolimernih čestica u morskoj koje nastaju kod povećane biološke aktivnosti, a imaju ulogu u biogeokemijskom ciklusu tragova iona metala, posebno biološki važnih iona metala kao što su bakar i željezo , uz primjenu elektrokemijskih metoda.Ti procesi imaju važnu ulogu u fotokemijskim i biološkim transformacijama organske tvari na površini mora, te u izmjeni plinova i materije između mora i atmosfere i predstavljaju jedan od važnih čimbenika u zaštiti morskog okoliša i globalnim klimatskim promjenama.
- 5. Uvela sam novu metodu određivanja polisaharida koji sadrže sulfatne i karboksilne grupe kao i polimernog materijala u prirodnim vodama koji sadrži N atome uz primjenu kronopotenciometrijske metode otapanja uz konstantnu struju.
- 6. Učestvovala sam u ispitivanjima ukupnih organskih tvari, površinski aktivnih tvari i kapaciteta kompleksiranja koje su po prvi puta mjerene u oborinama u kontinentalnom i obalnom dijelu Hrvatske.

**Vodenje diplomskih radova:**

Sandra Miletić, Ispitivanje utjecaja humusne kiseline na oksidoreduksijske procese olovnih iona. Sveučilište u Zagrebu, Prehrambeno-Biotehnološki Fakultet, 1991.

Sandra Rodić, Adsorpcija poliakrilnih kiselina na granici faza živina elektroda/ elektrolit. Sveučilište u Zagrebu, Prirodoslovno-Matematički Fakultet, Fizičko-Kemijski Zavod, 1995.

Jasminka Škudar, Adsorpcija polisaharida na živinoj elektrodi i na aluminijevom oksidu u kloridnim otopinama,Sveučilište u Zagrebu, Prehrambeno-Biotehnološki Fakultet, Zavod za fizikalnu kemiju, 1996.

Ivana Petričević, Interakcija iona bakra i kadmija s melanoidinima u kloridnim otopinama, Sveučilište u Zagrebu, Prehrambeno - Biotehnološki Fakultet , Zavod za fizikalnu kemiju, 1999.

Zrinka Topličan, Interakcija melanoidina s ionima bakra i kadmija u kloridnim otopinama, Sveučilište u Zagrebu, Prirodoslovno -Matematički Fakultet, Fizički odsjek, 2001.

Mia Malinarić, Elektrokemijska karakterizacija organske tvari u prirodnim vodama i oborinama, Sveučilište u Zagrebu, Fakultet Kemijskog Inžinerstva i Tehnologije, 2010.

Savjetnica kod izrade diplomskog rada: Danijela Lasić, Utjecaj nesanitarno odlaganog otpada na napuštenom površinskom kopu "Vihovići" na kakvoću podzemnih voda i na onečišćenje rijeke Neretve", Rudarsko-Geološko Naftni Fakultet Sveučilišta u Zagrebu, 2007.

**Vodenje doktorata:**

Mentor doktorata novakinje ( 2007-2012), dr sc. Slađana Strmečki Kos: „Primjena metode kronopotenciometrije na živinoj elektrodi u analizi polisaharida u moru“ obranjenog u prosincu 2012 na PMF-u, u okviru doktorskog studija Oceanologija.

**Suradnja na vodenju doktoranada:**

1. PhD thesis, Sotirios Karavoltsos, National and Kapodistrian University of Athens, Greece.
2. PhD thesis, Aikaterini Sakellari, National and Kapodistrian University of Athens, Greece:  
2006: Biogeochemical study of metals: study of trace elements' cycle in seawater and sediment and investigation of their impact in the food chain. (Greek), u okviru projekta "Irakleitos" (2002-2006).
3. PhD thesis, Sebastian Steigenberger, AWI, Bremerhaven, Germany:  
Sebastian Steigenberger, AWI –Bremerhaven-University of Bremen, 2008: The effect of acidic polysaccharides on the biogeochemistry of iron in the marine environment (Eng.)

### **Ostale aktivnosti**

- Bila sam aktivni učesnik na više međunarodnih konferencija i sastanaka. Najčešće sam sudjelovala na sastancima Komisije za znanstveno istraživanje Mediterana (CIESM) sa sjedištem u Monacu. Ujedno sam i član te komisije.
- Član sam Tehničkog pododbora 147- Kvaliteta voda, Hrvatskog zavoda za normizaciju i mjeriteljstvo ([www.dnzm.hr](http://www.dnzm.hr)).
- Član sam Editorial boarda časopisa International Journal of Ocean and Oceanography, Research India Publication i recenzent u medjunarodnim časopisima ( npr. Marine Chemistry, Frontiers in Marine Sciences, Marine Drugs, Acta Chimica Slovenica, Chemosphere, Analytical Letters, Environmental Science and Technology, Water Research) .
- Sudjelovala sam u pripremi i prijevodu na hrvatski jezik obrazovnog paketa “Water in the Mediterranean”, sa MIO-ECSDE ( Mediterranean Information Office for Environment, Culture and Sustainable Development) Atena, Grčka, a koji je namijenjen obrazovanju učenika srednjih škola.
- U rujnu 2004.g.( 2004-sada) izabrana sam za predavača obvezatnog predmeta Kemija mora na doktorskom studiju Oceanologija, PMF, Sveučilište u Zagrebu ( tada Magistarski studij).
- Član sam Vijeća doktorskog studija Oceanologija ( 2004-sada ). Od 2006. do 9. mj. 2008. bila sam zamjenica voditelja doktorskog studija Oceanologija, koji je u tom razdoblju prošao uspješnu transformaciju iz magistarskog u doktorski studij.
- Od 2011- 2013g. i od 2016- , član Znanstvenog Vijeća IRB-a, kao predsjednica područnog Vijeća struke Interdisciplinarne prirodne znanosti.

### **Sudionik ili voditelj u međunarodnim znanstvenim projekatima:**

- Developement of New Electroanalytical Techniques for determination of Surface Active Substances and Detergents in Seawater and Sea Surface Microlayer, UNEP, IOC, MED POL (1986.-1988.) suradnik.
- Pollutant Recieving Capacity of the Northern Adriatic Basin, CEC contract C11-0110- YU, (1989.)suradnik
- Studies of Interfacial Phenomena in Aquatic Systems, US-SFRJ bilateralna suradnja, NIST 849 (1990.-1994.).suradnik.
- Nature and Reactivity of Organic Matter in Marine and Estuarine Environment, USA - Croatian Grant JF 145 (1995.-1998.) suradnik.
- ALIS suradnja sa Velikom Britanijom preko Ministarstva znanosti i Britanskog Savjeta, Određivanje reaktivnosti folne kiseline u prirodnim vodama i fitoplanktonskim kulturama (voditelj , 1993.-1996.)
- CPSEE – Norwegian Cooperation Program with South-East Europe:” Ecosystem dynamics, marine chemistry; aquaculture and management in the Adriatic and North Norwegian Coastal Zone” (2001.-2004.), član steering committee.
- Projekt “Irakleitos: Research Scholarships with Priority to Basic Research” University of Athens, Greece (2002-2006) (suradnik).
- Projekt sa Njemačkom preko Deutsche Forschung Gemeinschaft-a (DFG) sa Alfred Wegener Institute for Marine and Polar Research, Bremerhaven, 2006-2008.( voditelj)
- Norwegian Cooperation Program on Research and Higher Education with the countries on the Western Balkans (2006.-2009.). Marine science and coastal management in the Adriatic, Western Balkan. An education and research network (suradnik).
- NATO (SfP) project « Sensors based on biomembranes for the detection of toxins and pollutants», (2008-2010).(suradnik)
- Bilateralni projekt sa Kinom 2014- 2015. Comparison of organic matter biogeochemistry in oligotrophic and eutrophic estuary: illustrated by lipids and amino acid enantiomers ( suradnik)

- Projekt “ARISTEIA”, Integrated study of trace metals biogeochemistry in the coastal marine environment (ISMET-COMAREN), 2012-2015, Greece ( suradnik)

**Ekološke studije (suradnik):**

-Ekološka studija akvatorija Riječkog zaljeva, CIM, IRB, juli 1977.

-Program istražnih radova potrebnih za utvrđivanje radiološkog stanja i kontrolu podzemne vode i vode rijeke Save 1979/1980, CIM , IRB, ožujak 1981.

-Određivanje specifičnih parametara za procjenu podobnosti voda iz susjednih slivova za opskrbu područja pod utjecajem NE- Krško, CIM, IRB, svibanj 1983.

-Istraživanje kritičnih puteva zagađenja na području vodocrpilišta Črnkovec, kolovoz 1986.

-Istraživanja u okviru bilateralne suradnje s Italijom na zaštiti Jadrana od zagađenja (ASCOP) 1979.-1992.

- Prijedlog zahtjeva kojih se treba pridržavati prilikom upuštanja otpadnih voda domaćinstva i industrije u vodotoke i more, CIM Zagreb, IRB, prosinac 1992.

-Standardne fizikalno -kemijske metode analize voda i otpadnih voda u ovlaštenim laboratorijima Hrvatske, CIM Zagreb, IRB, svibanj 1994.

-Izvještaj o radu Referentnog laboratorija tijekom 1995, CIM Zagreb, IRB, ožujak 1996.

-“Kvaliteta morske vode u solani Pag “, Pag, Hrvatska, 2011 (voditelj studije).

**Domaći projekti ( suradnik):**

-2015-2019, HRZZ projekt, “MEBTRACE” (New methodological approach to biogeochemical studies of trace metal speciation in coastal aquatic ecosystems)

- 2014-2018 , HRZZ projekt , „AMBIOMERES“( Appearance and interaction between biologically important organic compounds and micronutrient metals under environmental stress in marine ecosystem )

- 2007-2013, Projekt: MZOŠ, ” Priroda i reaktivnost organske tvari, interakcija sa tragovima i površinama u okolišu”.

-1998-2007, Hrvatski nacionalni monitoring program “ Sistematsko istraživanje Jadranskog mora kao osnova za održivi razvoj Hrvatske”;

- 2002-2005, Projekt: MZOŠ: “Priroda i reaktivnost organske tvari u okolišu”.

- 1996-2002, Program: Studija okolišnog rizika u Jadranu i kontinentalnoj Hrvatskoj. Tema: Priroda i reaktivnost organske tvari u morskoj i kontinentalnim vodama.

**• Član u organizacijskim odborima nekih međunarodnih skupova:**

-Član organizacijskog odbora konferencije “Lead in the Marine Environment”, Rovinj, 18-22 October,1977. i IX International Symposium “Chemistry of the Mediterranean ”, Primošten, 1986

- Jedan od organizatora sastanka, predavač i urednik Knjige sažetaka studentskog kursa u okviru suradnje s Norveškom: Marine Chemistry , Course 3 / Analytical methods, trace elements and organic matter in marine environment, Marine Science and Coastal Management in the Adriatic, Western Balkans / Plavšić, Marta (ur.) Zagreb: Institut Ruđer Bošković, 2.-17. November 2007, pp 40.

-Član Scientific Advisory Committee-a:

-AQUA 2006. (2nd International Conference Aqua 2006. Water Science and Technology, Integrated management on water resources, Athens, Greece, 23.-26. November 2006.)

- AQUA 2008. (3rd International Conference Water Science and Technology with emphasis on water and climate, Athens, Greece, 16.-19. October 2008.)

**Pozvana predavanja na konferencijama:**

1. Invited lecture on 45th Heyrovský Discussion: Electrochemistry of Biopolymers and Bioactive Compounds, Brno (Czech Republic), August 13th to 17th, 2012, on the occasion of the 90th anniversary of the invention of polarography. Title: “Adsorptive Transfer Chronopotentiometric Stripping of Sulfated Polysaccharides Applied to Seawater Analysis.”
2. A COST Action ES0801, Workshop; *Voltammetry and GEOTRACES*. Šibenik 2012. (pozvano predavanje). Title: “Organic matter-metal ions interaction-some highlights”.
3. International Conference, The Environmental Perspectives of the Gulf of Elefsis (A Mediterranean case study where Science meet Society), Elefsis, Greece, 11-12 September 2015. (pozvano predavanje) title: “Speciation studies of copper in the Gulf of Elefsis: the role of the macroalgae *Ulva rigida*”

**Pozvana predavanja u institucijama:**

- University of Liverpool, Oceanographic Laboratories, Liverpool, UK:  
 -Interaction of cadmium with humic acid in natural waters, lipanj 1989  
 -Adsorption of polyacrylic acids on mercury surface and  $\gamma$ - Al<sub>2</sub>O<sub>3</sub> particles in sodium chloride and seawater, srpanj 1995.
- Serija pozvanih predavanja (Electrochemical methods applied in the speciation studies in natural waters) u okviru Post Graduate Course on Oceanography of the National and Kapodistrian University of Athens, Athens, Greece (16-23.11.1998; 27.2.-5.3. 2000 i 2.11-9.11.2000).
- University of Plymouth, School of Environmental Sciences, Environmental Research Centre, University of Plymouth, UK, 26.03.2004 : Folic acid in the coastal Adriatic waters”.
- Alfred Wegener Institute for Marine and Polar Research, Bremerhaven, Germany, dva predavanja (6 i 13. 11. 2006) : “Organic matter in the seawater” ; “Trace metals- organic matter interactions in natural waters”
- Environmental Chemistry Laboratory, National and Kapodistrian University of Athens, suradnja na projektu “ARISTEIA”, 20. i 24.02. 2015. održana predavanja “Organic matter and metal ions in seawater” and “New electroanalytical techniques in the characterization of organic matter in seawater”.

**Scientometrijski podaci: 61 rad (WOS baza) od toga 32 u Q1 kvartilu, broj citata 840 (613), h index =16**

**Popis radova :**

1. M. Plavšić, S. Kozar, D. Krznarić, H. Bilinski and M. Branica, The influence of organics on the adsorption of copper (II) on Al<sub>2</sub>O<sub>3</sub> in seawater. Model studies with EDTA, Mar. Chem., 9 (1980) 175-182.
2. M. Plavšić, D. Krznarić and M. Branica, Determination of the apparent copper complexing capacity of seawater by anodic stripping voltammetry, Mar. Chem., 11 (1982) 17-31.
3. V. Vančina, M. Plavšić, H. Bilinski, M. Branica and F.J. Millero, Preparation and solubility of northupite from brine and its adsorption properties for Cu(II) and Cd(II) in seawater, Geochim. Cosmochim. Acta, 50 (1986) 1329-1336.
4. M. Plavšić and M. Branica, Voltammetric investigation of copper (II) interaction with DOM isolated on SEP-PAK-C-18 cartridges, Ocean Engn. 11 (1/2) (1986) 99-113.
5. M. Plavšić, H. Bilinski and M. Branica, Voltammetric study of adsorption of Cu (II) species on solid particles added to seawater, Mar. Chem., 21 (1987) 151-160.
6. M. Plavšić and B. Čosović, The effects of surface active substances on the electrochemical behaviour of copper ions in chloride solutions and in natural waters, Wat. Res., 23/12 (1989) 1545-1553.
7. Z. Kozarac, M. Plavšić, B. Čosović and D. Viličić, Interaction of cadmium and copper with surface active organic matter and complexing ligands released by marine phytoplankton. Mar. Chem., 26 (1989) 313-330.

8. M. Plavšić, V. Vojvodić and B. Čosović, Characterization of surface active substances during a semi-field experiment of a phytoplankton bloom. *Anal. Chim. Acta*, 232 (1990) 131-140.
9. H. Bilinski, S. Kozar, M. Plavšić, Ž. Kwokal and M. Branica, Trace metal adsorption on inorganic solid phases under estuarine conditions *Mar. Chem.*, 32 (1991) 225-234.
10. M. Plavšić and B. Čosović, Study of cadmium interaction with humic acid at the mercury/water interface *Mar. Chem.*, 36 (1991) 39-49.
11. D. Krznarić, M. Plavšić and B. Čosović, Voltammetric investigations of copper processes in the presence of oxygen, *Electroanalysis*, 4 (1992) 143-150.
12. M. Plavšić, B. Čosović and S. Miletić, The comparison of the behaviour of copper , cadmium and lead in the presence of humic acid in NaCl solution, *Anal. Chim. Acta*, 255 (1991) 15-21.
13. M. Plavšić and B. Čosović, Influence of surface active substances on the oxidoreduction processes of metal ions - a contribution to the speciation of metals in aquatic systems, *Anal. Chim. Acta*, 284 (1994) 539-545.
14. D. Krznarić, M. Plavšić and B. Čosović, Voltammetric investigations of the effect of Triton-X-100 on copper processes in the presence of oxygen. *Electroanalysis*, 6 (1994) 131-137.
15. M. Plavšić, D. Krznarić and B. Čosović, The electrochemical processes of copper in the presence of Triton-X-100. *Electroanalysis*, 6 (1994) 469-474.
16. M. Plavšić and B. Čosović, Adsorption of Acrylic and Polyacrylic on the Mercury Electrode Sodium Chloride Interface, *Colloids and Surfaces*, 88 (1994) 243-250.
17. M. Plavšić, B. Čosović and S. Rodić, Adsorption of polyacrylic acid on hydrophobic and hydrophilic surfaces, *Colloid and Polymer Science*, 274(1996) 548-554.
18. M. Plavšić, Xiankun Lu and C.M.G. van den Berg, A voltammetric study of the reactivity of folic acid in algal cultures and in natural waters, *Croat .Chem . Acta* 70(1997) 171-191.
19. M. Plavšić, B. Čosović and J. Škudar, Adsorption of sulfated polysaccharides on mercury and  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> particles in sodium chloride solution and seawater, *Croat. Chem. Acta* 70(1997) 111-123
- .
20. M. Plavšić and B. Čosović, Adsorption of carrageenans on mercury surface in sodium chloride solution and seawater, *Croat. Chem. Acta* 71 (1998) 233-243.
21. M. Plavšić and B. Čosović, Voltammetric study of the role of organic acids on the sorption of Cd and Cu ions by alumina particles, *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 151 (1999) 189-200.
22. H. Bilinski , Ž. Kwokal, M. Plavšić , M. Wrzischaer and M. Branica, Mercury distribution in the water column of the stratified Krka river estuary (Croatia): Importance of natural organic matter and of strong winds, *Wat. Res.* 34 /7 (2000) 2001-2010.
23. I. Ciglenečki, B. Čosović, V. Vojvodić, M. Plavšić, K. Furić, A. Minacci and F. Baldi, The role of reduced sulfur species in the coalescence of polysaccharides in the Adriatic Sea, *Mar. Chem.* 71(2000) 233-249.
24. M. Plavšić and B. Čosović, Adsorption properties of different polysaccharides on mercury in sodium chloride solutions, *Electroanalysis* 12/12 (2000) 895-900.
25. M. Plavšić, S.Terzić, M.Ahel and C.M.G. van den Berg, Folic acid in the coastal waters of the Adriatic sea. *Marine and Freshwater Research*, 2002, 53(8), 1245-1252.
26. M. Plavšić, Electroanalytical techniques applied for studying the interaction of organic matter and particles with metal ions in natural waters, *Analytical Letters* 2003, 36/1, 143-157.

27. I.Ciglenečki, M. Plavšić, V.Vojvodić, B.Ćosović, M.Pepi and F.Baldi, Mucopolysaccharide transformation by sulfide in diatom cultures and natural mucilage, *Marine Ecol Prog Ser* 263 (2003), 17-27.
28. M. Plavšić, Long- term variations in the folic acid concentrations in the Northern Adriatic Sea. *Environment International*, 2004, 30, 761-767.
29. M. Scoullos, M. Plavšić and S. Karavoltos, Copper speciation in the Gulf of Elefsis. The role of macroalgae *Ulva rigida*. *Mar. Chem.* , 2004, 86, 51-63.
30. B.Gašparović , M.Plavšić , B. Ćosović and M. Riegstad, Organic matter in the subarctic Norwegian fjords during late spring/summer period , *Estuarine ,Coastal and Shelf Sci.*,2005, 62, 95-107.
31. M.Plavšić, C.Lee and B.Ćosović, Copper complexing properties of melanoidins and marine humic material, *Sci of Total.Environm.*, 366 (2006)310-319.
32. M.Scoullos, M.Plavšić , S.Karavoltos, A.Sakellari, Partitioning and distribution of dissolved copper, cadmium and organic matter in Mediterranean marine coastal areas.The case of mucilage event, *Estuarine Coastal and Shelf Science*,2006,67,484-490.
33. B.Gasparovic, M.Plavsic , N.Boskovic, B. Cosovic, M. Reigstad, Organic matter characterization in Barents Sea and eastern Arctic Ocean during summer, *Mar. Chem.*,2007,105, 151-165.
34. B.Gasparovic, M. Plavsic, B.Cosovic, A. Saliot, Organic matter characterization in the sea surface microlayers in the subarctic Norwegian fjords region, *Mar. Chem.* 2007, 105, 1-14.
35. M.Plavsic, B.Gasparovic, B.Cosovic, Copper complexation and surfactant activity of organic matter in coastal seawater and surface microlayer samples of North Norwegian fjords and Mediterranean, *Fresenius Env. Bulletin*, 2007, 16/4, 372-378.
36. M. Plavšić, P. Orlović-Leko, Z. Kozarac, E.B. Nakić, S. Strmečki, B. Ćosović, Complexation of copper ions in atmospheric precipitation in Croatia, *Atmospheric Research*, 2008, 87, 80-87.
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