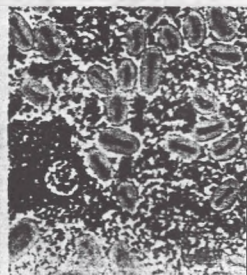
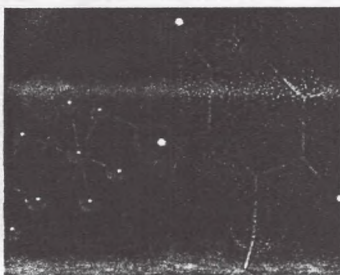
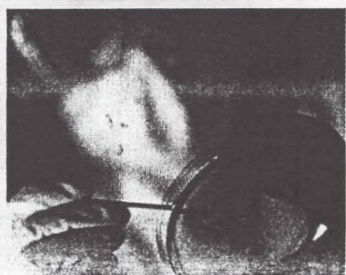
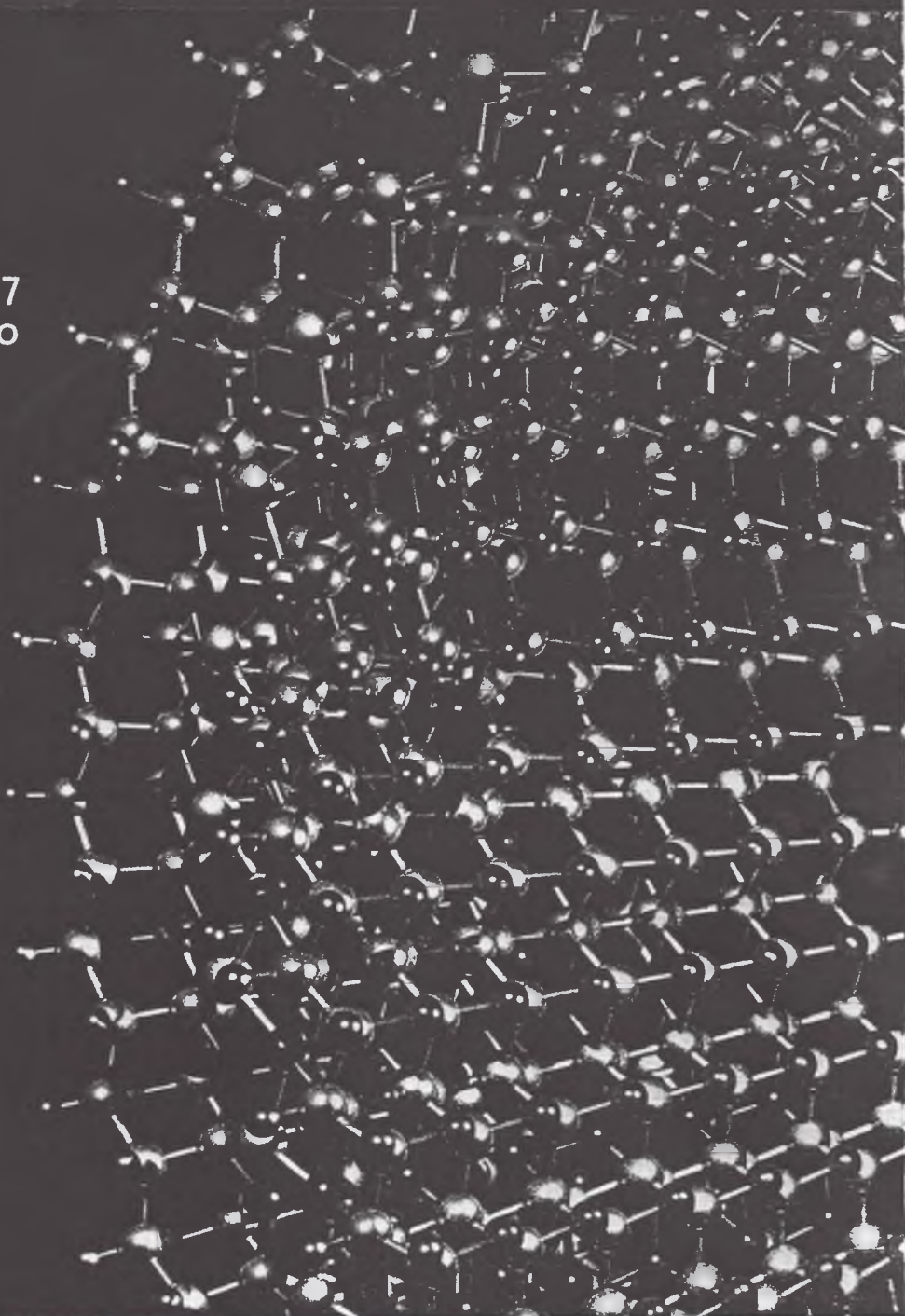


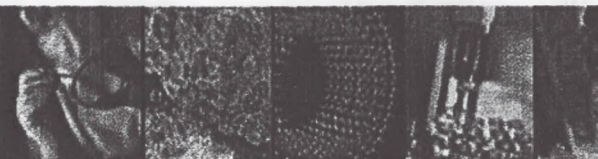
# Final Program

FEBRUARY 25 - MARCH 2, 2007  
McCORMICK PLACE • CHICAGO

[www.pittcon.org](http://www.pittcon.org)



**PITTCO<sup>N</sup>**  
CONFERENCE & EXPO 2007



Search

Messages from the Pittcon  
2007 President, Program  
Chairman, and Exposition  
Chairman

Agenda of Sessions

Focus Areas At-A-Glance

Technical Program

Author Index

Presider Index

Award Winners

Pittcon Short Courses

Waters Symposium

Message from Pittcon  
2008 Program Chairman

Pittcon 2008 Program

Suggestion Form and

General Guidelines

Opening Session/Planetary

Lecture

ACS - Division of  
Analytical Chemistry

Technical Presentations

Conference Networking

Sessions

Copyright

Help

Date: 2/27/2007

1110-3P

**S, N-CONTAINING ORGANO-SILICA FOR NOBEL METAL ANALYSIS IN NATURAL AND WASTEWATER O**

Olena Konoplytska, National Taras Shevchenko University, 60 Vladimirskaya, Kiev 01033, Ukraine, GM Zaitseva, VM Zaitsev

Selective pre-concentration of a trace amount of heavy and noble metal ions is usually performed with the use of complexing sorbents, including organo-silicas. The wide variety of modified S,N-containing silicas are known. They show great affinity to the several heavy metal ions. However, most of them are unstable, since having easily oxidized SH-groups. The purpose of current research is application of stable S,N-containing organo-silica with covalently immobilized propylthioethylamine (SN-SiO<sub>2</sub>) for pre-concentration and analysis of some heavy and noble metal ions. It was demonstrated that SN-SiO<sub>2</sub> effectively binds some metal ions, such as Au, Pd, Hg, Pb, Cd, Cu etc. Adsorption properties of SN-SiO<sub>2</sub> at different conditions, such as solution pH (ranging from 0 to 8), metal concentrations (ranging from 50 μmol to 1 mmol) and contact time (ranging from 5 minutes to 30 minutes) was studied. Reversibility of the process was also controlled. The results presented, demonstrate that SN-SiO<sub>2</sub> is an efficient adsorbent for selective pre-concentration of lead, copper, zinc, cadmium, palladium, silver and gold from wastewater. The Cu, Pb, Cd and Zn ions can be completely removed from water at pH 6-7, followed by acid elution and finally analysed by atomic-absorption technique. The Au, Ag and Pd ions can be selectively removed at pH 1-3, followed by 10% thiourea desorption and further determination by atomic-absorption technique. The developed method is successfully applied for the analysis of natural and drinking water (for Cu, Zn, Cd, Pb and Ag with detection limits of 0.0021 μg ml<sup>-1</sup>, 2.19 10<sup>-4</sup> μg ml<sup>-1</sup>, 5.69 10<sup>-4</sup> μg ml<sup>-1</sup>, 0.0076 μg ml<sup>-1</sup>, 0.005 μg ml<sup>-1</sup> respectively) and wastewater (for Au and Pd with detection limit 0.01 μg ml<sup>-1</sup>, 0.05 μg ml<sup>-1</sup> respectively).

**Keywords:** Atomic Spectroscopy, Modified Silica  
**Application Code:** Environmental  
**Methodology Code:** Atomic Spectroscopy/Elemental Analysis



## 1110-3P

### S, N-CONTAINING ORGANO-SILICA FOR NOBEL METAL ANALYSIS IN NATURAL AND WASTEWATER O

Olena Konopliutska, National Taras Shevchenko University, 60 Vladimirskaya, Kiev 01033, Ukraine, GM Zaitseva, VM Zaitsev

Selective pre-concentration of a trace amount of heavy and noble metal ions is usually performed with the use of complexing sorbents, including organo-silicas. The wide variety of modified S,N-containing silicas are known. They show great affinity to the several heavy metal ions. However, most of them are unstable, since having easily oxidized SH-groups. The purpose of current research is application of stable S,N-containing organo-silica with covalently immobilized propylthioethyleamine (SN-SiO<sub>2</sub>) for pre-concentration and analysis of some heavy and noble metal ions. It was demonstrated that SN-SiO<sub>2</sub> effectively binds some metal ions, such as Au, Pd, Hg, Pb, Cd, Cu etc. Adsorption properties of SN-SiO<sub>2</sub> at different conditions, such as solution pH (ranging from 0 to 8), metal concentrations (ranging from 50 mkmol to 1 mmol) and contact time (ranging from 5 minutes to 30 minutes) was studied. Reversibility of the process was also controlled. The results presented, demonstrate that SN-SiO<sub>2</sub> is an efficient adsorbent for selective pre-concentration of lead, copper, zinc; cadmium, palladium, silver and gold from wastewater. The Cu, Pb, Cd and Zn ions can be completely removed from water at pH 6-7, followed by acid elution and finally analysed by atomic-absorption technique. The Au, Ag and Pd ions can be selectively removed at pH 1-3, followed by 10% thiourea desorption and further determination by atomic-absorption technique. The developed method is successfully applied for the analysis of natural and drinking water (for Cu, Zn, Cd, Pb and Ag with detection limits of 0.0021 µg ml<sup>-1</sup>, 2.19 · 10<sup>-4</sup> µg ml<sup>-1</sup>, 5.69 · 10<sup>-4</sup> µg ml<sup>-1</sup>, 0.0076 µg ml<sup>-1</sup>, 0.005 µg ml<sup>-1</sup> respectively) and wastewater (for Au and Pd with detection limit 0.01 µg ml<sup>-1</sup>, 0.05 µg ml<sup>-1</sup> respectively).

**Keywords:** Atomic Spectroscopy, Modified Silica  
**Application Code:** Environmental  
**Methodology Code:** Atomic Spectroscopy/Elemental Analysis

S, N-Containing Organo-Silica for Nobel Metal Analysis in Natural and Wastewater O  
Olena Konoplińska, National Taras Shevchenko University, 60 Vladimirska, Kiev 01033,  
Ukraine, GM Zaitseva, VM Zaitsev

Selective pre-concentration of a trace amount of heavy and noble metal ions is usually performed with the use of complexing sorbents, including organo-silicas. The wide variety of modified S,N-containing silicas are known. They show great affinity to the several heavy metal ions. However, most of them are unstable, since having easily oxidized SH-groups. The purpose of current research is application of stable S,N-containing organo-silica with covalently immobilized propylthioethylamine (SN-SiO<sub>2</sub>) for pre-concentration and analysis of some heavy and noble metal ions. It was demonstrated that SN-SiO<sub>2</sub> effectively binds some metal ions, such as Au, Pd, Hg, Pb, Cd, Cu etc. Adsorption properties of SN-SiO<sub>2</sub> at different conditions, such as solution pH (ranging from 0 to 8), metal concentrations (ranging from 50 μmol to 1 mmol) and contact time (ranging from 5 minutes to 30 minutes) was studied. Reversibility of the process was also controlled. The results presented, demonstrate that SN-SiO<sub>2</sub> is an efficient adsorbent for selective pre-concentration of lead, copper, zinc, cadmium, palladium, silver and gold from wastewater. The Cu, Pb, Cd and Zn ions can be completely removed from water at pH 6-7, followed by acid elution and finally analysed by atomic-absorption technique. The Au, Ag and Pd ions can be selectively removed at pH 1-3, followed by 10% thiourea desorption and further determination by atomic-absorption technique. The developed method is successfully applied for the analysis of natural and drinking water (for Cu, Zn, Cd, Pb and Ag with detection limits of 0.0021 μg ml<sup>-1</sup>, 2.19 · 10<sup>-4</sup> μg ml<sup>-1</sup>, 5.69 · 10<sup>-4</sup> μg ml<sup>-1</sup>, 0.0076 μg ml<sup>-1</sup>, 0.005 μg ml<sup>-1</sup> respectively) and wastewater (for Au and Pd with detection limit 0.01 μg ml<sup>-1</sup>, 0.05 μg ml<sup>-1</sup> respectively).

Keywords:

Atomic Spectroscopy, Modified Silica

Application Code:

Environmental

Methodology Code:

Atomic Spectroscopy/Elemental Analysis