Code: QA852

Name: Aplicações Analíticas da Espectroscopia Vibracional

Name in English: Vibrational Spectroscopy Applied to Analytical Chemistry

Name in Spanish: Aplicaciones Analíticas de la spectroscopia Vibracional

Subject type: Weekly

Approval Type: Grade and frequency

Characteristic: Regular

Frequency: 75%

Period Type / Offering period: Semi-annual / Every period

Requires Final Exam: Yes

Vectors

T	L	P	O	PE	OE	SL	WEEKS	CREDITS
2	**0**	**0**	**0**	**0**	**0**	**2**	**15**	**2**

Occurrence on curriculum:

Pre requirement: QA584 ou QA585

Summary:
Analytical applications of near infrared, mid infrared and Raman spectroscopy. Multivariate data treatment. Processes control.

Program:
Introduction. Principles of vibrational spectroscopy. Mid- and near infrared. Instrumentation. Fourier-transform spectrometers. Analytical applications. Qualitative and quantitative applications. Raman spectroscopy. Surface-enhanced Raman spectroscopy. Hyperspectral imaging. Chemometrics for vibrational spectroscopy data treatment. Vibrational spectroscopy for process control.

Basic Bibliography

1) SKOOG, D.A.; WEST, D.M.; HOLLER, F.J.; CROUCH, S.R. **Fundamentos de Química Analítica**. tradução da 9. Ed. São Paulo: Cengage Learning, 2015. 950 p.
2) HARRIS, D.C. **Análise Química Quantitativa**. 9. Ed. Rio de Janeiro: LTC, 2017. 774 p.
3) SKOOG, D.A.; HOLLER, F.J.; NIEMAN, T.A. **Princípios de Análise Instrumental**. 6. Ed. Porto Alegre: Bookman, 2009. 1055 p.

Supplementary Bibliography

1) SALZER, R.; SIESLER, H.W. **Infrared and Raman Spectroscopic Imaging**. Weinheim: Willey, 2014. 510 p. E-book.
2) VANDENABEELE, P. **Practical Raman Spectroscopy: An Introduction**, Weinheim: Willey, 2013. E-book.
3) HARRIS, D.C.; BERTOLUCCI, M.D. **Symmetry and Spectroscopy: An Introduction to Vibrational and Electronic Spectroscopy**. New York: Dover, 1989. 550 p.
4) SALA, O. **Fundamentos da Espectroscopia Raman e no Infravermelho**. 2. Ed. São Paulo: UNESP, 2008. 276 p.
5) SIEBERT, F. **Vibrational spectroscopy in life science**. Weinheim: Wiley-VCH, 2008. 310 p. E-book.