INSTITUTE FOR ENGINEERING THERMODYNAMICS
Chairman: Prof. Dr.-Ing. Stefan Will

Laboratory course report

Application of Raman spectroscopy

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Execution date: January 23, 2024

Submission date: February 07, 2024

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1 Introduction

Some fancy introduction.

The assignment, description of the equipment and procedure and further details about the Lab Course are described in the given handbook [1].

2 Theoretical basics

The following theoretical basics are summarized from the standard literature in optics [2]–[5] and more specifically Raman application [6], [7].

2.1 Molecule - light interactions

2.2 Scattering effects

2.3 Measurement of different phisical properties - RAMAN spectroscopy

3 Experimental setup

3.1 Used equipment

3.2 Measurement setup and preparations

3.3 Expectations

3.4 Execution

4 Results

4.1 Data presentation and preparation

4.2 Evaluation

4.3 Error discussion

5 Summary

Acronyms

SG	synchronous generator

Symbols

Complete list of Symbols

H_{gen}	s	inertia constant of a synchronous generator (SG)
P	W	Power; electrical or mechanical

[MK1]: Update page numbering post-sections; special attention to left/righ page issues

Bibliography

[1] P. Bräuer, *Application of Raman spectroscopy*, Winter term 2022/2023.

[2] M. Born and E. Wolf, *Principles of Optics: Electromagnetic Theory of Propagation, Interference and Diffraction of Light*, 7th expanded ed. Cambridge ; New York: Cambridge University Press, 1999, 952 pp., ISBN: 978-0-521-64222-4 978-0-521-63921-7.

[3] E. Hecht and E. Hecht, *Optik*, 4., überarb. Aufl. München Wien: Oldenbourg, 2005, 1116 pp., ISBN: 978-3-486-27359-5.

[4] S. G. Lipson, H. S. Lipson, and D. S. Tannhauser, *Optik*. Berlin, Heidelberg: Springer Berlin Heidelberg : Imprint : Springer, 1997, ISBN: 978-3-642-59053-5.

[5] H. Niedrig, Ed., *Optik: Wellen- und Teilchenoptik: Part 1* (Lehrbuch der Experimentalphysik / Bergmann; Schaefer 3, Part 1), 10. Auflage[Ausg. in 8 Bänden]. Berlin: de Gruyter, 2004, 668 pp., ISBN: 978-3-11-017081-8.

[6] Herzberg and Huber, *Molecular Spectra and Molecular Structure. 4, Constants of Diatomic Molecules*, Ristampa anastatica. Berlin: Springer, 2013, ISBN: 978-1-4757-0963-6.

[7] B. Schrader and D. Bougeard, *Infrared and Raman Spectroscopy: Methods and Applications*. Weinheim: VCH, 1995, ISBN: 978-3-527-61543-8.