# Polarisationsabhängige Messung von Tetrachlormethanramanspektren

**Date:** 2020-11-24
**Created by:** Jonas Eichhorn



# Polarisationsabhängige Messung von Ramanspektren für Tetrachlormethan

Ändert sich das Ramanspektrum für unterschiedlich linearpolarisierte Anregungslaser?

## Aufbau

Der Laser wird in Fiberbench geleitet und passiert eine Wellenplatte. Anschließend wird der Laser über die Anregungsfaser von der Fiberbench ins Mikroskop des WiTec gekoppelt. Der Strahl wechselwirkt mit der Probe und wird über die Detektorfaser zum Detektor des WiTec geleitet.

| **Aufbau** | |
|---|---|
| Ramanspektrometer | WiTec (ZAF) |
| Fiberbench | B1 (ThorLabs FBP-A-FC) |
| Anregungsfaser | F2 (single-mode) |
| Detektorfaser | F3 (multi-mode) |
| Wellenplatte | W1 |
| Probe | Küvette mit Tetrachlormethan |
| Powermeter | Thorlabs PM100D/S121C |

## Messung

| **Metadaten** | |
|---|---|
| Maximale Laserleistung / mW | maxLaserPower.csv |
| Gemessene Leistung ohne Laser / mW | labNoise.csv |

Für verschiedene Positionen der Wellenplatte werden die Ramanspektren von Tetrachlormethan gemessen. Die Laserleistung wird für jedes Spektrum am Mikroskoptisch gemessen.

| **Messdaten** | | | |
|---|---|---|---|
| Position Wellenplatte / ° | Laserleistung / mW | Ramanspektrum | Metadaten Ramanspektrum |

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| | | | |
|---|---|---|---|
| 0 | W000deg_laser.csv | W000deg_tetrachloromethane_000_Spec.Data-1.txt | W000deg_tetrachloromethane_000-Information.txt |
| 5 | W005deg_laser.csv | W005deg_tetrachloromethane_000_Spec.Data-1.txt | W005deg_tetrachloromethane_000-Information.txt |
| 10 | W010deg_laser.csv | W010deg_tetrachloromethane_000_Spec.Data-1.txt | W010deg_tetrachloromethane_000-Information.txt |
| 15 | W015deg_laser.csv | W015deg_tetrachloromethane_000_Spec.Data-1.txt | W015deg_tetrachloromethane_000-Information.txt |
| 20 | W020deg_laser.csv | W020deg_tetrachloromethane_000_Spec.Data-1.txt | W020deg_tetrachloromethane_000-Information.txt |
| 25 | W025deg_laser.csv | W025deg_tetrachloromethane_000_Spec.Data-1.txt | W025deg_tetrachloromethane_000-Information.txt |
| 30 | W030deg_laser.csv | W030deg_tetrachloromethane_000_Spec.Data-1.txt | W030deg_tetrachloromethane_000-Information.txt |
| 35 | W035deg_laser.csv | W035deg_tetrachloromethane_000_Spec.Data-1.txt | W035deg_tetrachloromethane_000-Information.txt |
| 40 | W040deg_laser.csv | W040deg_tetrachloromethane_000_Spec.Data-1.txt | W040deg_tetrachloromethane_000-Information.txt |
| 45 | W045deg_laser.csv | W045deg_tetrachloromethane_000_Spec.Data-1.txt | W045deg_tetrachloromethane_000-Information.txt |
| 50 | W050deg_laser.csv | W050deg_tetrachloromethane_000_Spec.Data-1.txt | W050deg_tetrachloromethane_000-Information.txt |
| 55 | W055deg_laser.csv | W055deg_tetrachloromethane_000_Spec.Data-1.txt | W055deg_tetrachloromethane_000-Information.txt |
| 60 | W060deg_laser.csv | W060deg_tetrachloromethane_000_Spec.Data-1.txt | W060deg_tetrachloromethane_000-Information.txt |
| 65 | W065deg_laser.csv | W065deg_tetrachloromethane_000_Spec.Data-1.txt | W065deg_tetrachloromethane_000-Information.txt |
| 70 | W070deg_laser.csv | W070deg_tetrachloromethane_000_Spec.Data-1.txt | W070deg_tetrachloromethane_000-Information.txt |
| 75 | W075deg_laser.csv | W075deg_tetrachloromethane_000_Spec.Data-1.txt | W075deg_tetrachloromethane_000-Information.txt |
| 80 | W080deg_laser.csv | W080deg_tetrachloromethane_000_Spec.Data-1.txt | W080deg_tetrachloromethane_000-Information.txt |
| 85 | W085deg_laser.csv | W085deg_tetrachloromethane_000_Spec.Data-1.txt | W085deg_tetrachloromethane_000-Information.txt |
| 90 | W090deg_laser.csv | W090deg_tetrachloromethane_000_Spec.Data-1.txt | W090deg_tetrachloromethane_000-Information.txt |
| 112 | W112deg_laser.csv | W112deg_tetrachloromethane_000_Spec.Data-1.txt | W112deg_tetrachloromethane_000-Information.txt |
| 135 | W135deg_laser.csv | W135deg_tetrachloromethane_000_Spec.Data-1.txt | W135deg_tetrachloromethane_000-Information.txt |
| 158 | W158deg_laser.csv | W158deg_tetrachloromethane_000_Spec.Data-1.txt | W158deg_tetrachloromethane_000-Information.txt |
| 180 | W180deg_laser.csv | W180deg_tetrachloromethane_000_Spec.Data-1.txt | W180deg_tetrachloromethane_000-Information.txt |

## Attached files:

labNoise.csv
sha256 : 4fbb8a788fd4f0a448f56d18d23f5154a2b1d4a32e084d314cde036c12ae8c4f

maxLaserPower.csv
sha256 : 9e5bf4541115e5018527266b1b3fd72631ce5b5c6114b34851cfc7d701542cac

W000deg_laser.csv
sha256 : 6c736f3d4252735b69dbe37fd4aac8729651a1fb8afe89f1e5d14c93e93070cd

W010deg_laser.csv

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sha256 : 9ad753104846806b3cb33b81a6eab36188a704ebf423385cb100d68101f57c93

W015deg_laser.csv
sha256 : 401bb1f55131c6d858502cbf55d5adc85031c7c9b84482ff0cdbd98404f3dde1

W020deg_laser.csv
sha256 : 98e6a3b02dd85b0862dc15f9174d5528e0219a665a11324ff88d790c821a92ce

W025deg_laser.csv
sha256 : 266fb5712415e98e123e57fbe7f49af4b0a158b1e2650ed189905c5f26461898

W030deg_laser.csv
sha256 : f61a0f4848f72fef8ca8cf5edbb637a6e11206f4f5b8f8a76d88168bf3e75b08

W035deg_laser.csv
sha256 : 3654c589f5808312b291dfce87dafdb254e0cac94f98cde916297eee0cf2005d

W040deg_laser.csv
sha256 : e8ce1ce0e3f5566c8e39fd3b48e55ec2753659cfed0830944cf8bce5f07225b4

W045deg_laser.csv
sha256 : f4341cd87fe37e8f52a67b5ccf95bdd152ca23903f70b97f7d4886ff48a65885

W050deg_laser.csv
sha256 : e3256c63d3051031cfddfcdbe6e3a793beaee1da5c7f86edf6f82fc70bb0cbdf

W055deg_laser.csv
sha256 : 74c082f4f2ea488da2c3cb8ed7f664384dd10950fe801499ece77bbe588c3b63

W060deg_laser.csv
sha256 : 5141ee2fa19ae2bb907d5c61c7c06e1ae899546776920db45330cf8a5127216b

W065deg_laser.csv
sha256 : f45a27f2057da3ed11212e02b49101913f20a857c7fdf9af1e566d0668315f1e

W070deg_laser.csv
sha256 : 5b36869664005f8373d661854d5a457771e5fad0c261f36256ed47552bd5fb5d

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W075deg_laser.csv
sha256 : aa733d8a04b2341f26dffcedf5ff3f0bf381bbe1b04704e314ae129c9fa5673c

W080deg_laser.csv
sha256 : 4c0f24fdd4f2f5fb2615d0d365868dbe308094ec4be08b623339ef63be18f9ac

W085deg_laser.csv
sha256 : 483352b0065e7422a7f5fd05fdb0acbff085488b82adbc1176876ae35ec69266

W005deg_laser.csv
sha256 : 562406f049bda373c53d26ad61c22e082057fa626e0c0116385abd122e37d8ce

W090deg_laser.csv
sha256 : 664de8a7ab261393d5b2d3e54952b482a7fe086eeeb72475eb9849c9774a3ad9

W000deg_tetrachloromethane_000-Information.txt
sha256 : 25deac13c393bc389fff619016cf82aefcc8605578bcb17ac66f0d7b2bf3553b

W000deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : 7d7b69c878a0c0c45f7fa5042738adc0b15c0d46aadf6cd53195d9edfe7fa290

W005deg_tetrachloromethane_000-Information.txt
sha256 : 819c480cdcee0773f162c1fe746029dd549f3d852d047692c28c22b5c0d8561a

W005deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : ddcb8fa3140c6661576f4220dcf5c76a63199846a607ccd7988578920e9edc50

W010deg_tetrachloromethane_000-Information.txt
sha256 : d10c16e5f4cea2d14c8c86e75f4626e6422f3a9dd74c6924140e553781f8025c

W010deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : 67949b8628e7bec49f48886566655286c0731b2fc12f359188a096cd0ced64a6

W015deg_tetrachloromethane_000-Information.txt
sha256 : dafdc71ba245d875a3a4f832f4653e207e183c53ce1cd6e476ec4075cbdcb8d9

W015deg_tetrachloromethane_000_Spec.Data-1.txt

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sha256 : de97a09aae70ede994181da164beeb7761563c9781499046afd9b99d5bb6c3ff

W020deg_tetrachloromethane_000-Information.txt
sha256 : b23b279a54957318ccdc3b3352540527ce9b23b4d667e4c885c1d521c43f2197

W020deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : e323be5e58adc95834811578e9276602f3844463ce7f102805fbb7611bea743b

W025deg_tetrachloromethane_000-Information.txt
sha256 : aebe7c08edbec89f41ea2b896b36df94faf87c136f96324844d6027f7fa59097

W025deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : 2acd264a7fa31394cb18351b695a62a97a941b6dbecd9d18f4232f5cb37efacd

W030deg_tetrachloromethane_000-Information.txt
sha256 : 128926e02c3e555fe04197ef31a402da87ccb5f1a1106cb82c939b9090e40a0b

W030deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : 20182e750f31d954f8806c49c68d56c394a7bec67cc6156033497455adfe5037

W035deg_tetrachloromethane_000-Information.txt
sha256 : 97b04d5bcc518f41a0b17672c2f3cf4ff2cabe9390f020aed76c77c8817906ac

W035deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : b1fbc3e4b4c804f1fdebd418f568c37cd15f56437dc195b91e987f00b1430c1f

W040deg_tetrachloromethane_000-Information.txt
sha256 : 2a8b74e22699bee2237728881906713918 73d86f699d9254ad52bc62428566bd

W040deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : 0bb86e122b1f847f1496fac599a61fdab32f27e08c11e309a4bca924b8d25e66

W045deg_tetrachloromethane_000-Information.txt
sha256 : 2dbeb7f8234ae76b8a3ad7524b57311b003b563b0e40a18ef8f3ba9bb3e05d22

W045deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : 59f4aec0c0dba41bed08b23e8c713b6e9638b28a53ba2ee772e120a944fbe02f

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W050deg_tetrachloromethane_000-Information.txt
sha256 : df4dd99c200983da0e00ab142a747f59e0f62970cc463b463668d9c2e455ee36

W050deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : 8420832620302ece320b65caca59ef380fc9b0be1f835b02f7ac16f48f39d041

W055deg_tetrachloromethane_000-Information.txt
sha256 : 92cfe414015290b54522d3e6940fcf3fa3fcb078915d49bf48335590926e76a5

W055deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : f779cdf26c59ee2a0dfe2c82604d5fc577690a0253d37fc707a11c014f406d10

W060deg_tetrachloromethane_000-Information.txt
sha256 : 735221bb6b1f75dbadfeb917b44864b5270e99689a23050ad6e3ae36802bd069

W060deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : 971fec499ec7e8445c5b4b2adbc6d23335010a8cf90a440599fd9a03939164c2

W065deg_tetrachloromethane_000-Information.txt
sha256 : 29c4cc887ca6231849b919d71180d7c5d5801a783ed3e4fce0493e074451e95f

W065deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : d153b8721e000d347bad7df21dc51b734396bdb97eabc3192d7b2598b4ba4d2d

W070deg_tetrachloromethane_000-Information.txt
sha256 : b0ec338def0da6749f683d28c4ff1263a8e0da94292fd448b948822b57a2d287

W075deg_tetrachloromethane_000-Information.txt
sha256 : 84f62c3ab657fe661d30cb1ce2ad4d9d80c8d1d3284bb894421e53ce183872ba

W070deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : 079a1057c291e986691ca1008ce21503c6d22f949d0460243f8324e2f9eb7b48

W075deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : 0153eb5cc199476985a0e8c87bd4728b09e74be9a178664c458ef34b7f4c3fec

W080deg_tetrachloromethane_000-Information.txt

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sha256 : 27bbdbc3a7221071ea68683e5696dcbb0e6f58313bfb3dc13dd31b86e09f73f0

W080deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : 327807e4e0acbd24bca1d0cfeeb5f9c99c724aabba77147133facb0b447e7476

W085deg_tetrachloromethane_000-Information.txt
sha256 : 275e6f270423c251fd1f68a22993ba1545a71c6d8b5789b8f63b8b99b8b24d08

W085deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : 551e1f5d696d549d0ccc3c02a6f7718990030ab2e11bc875c9d7423a56d3b6db

W090deg_tetrachloromethane_000-Information.txt
sha256 : 804b17a5f1bfd7a00f72cce7ef3c3e62a61a4620926088d6ee55f087b0c9637e

W090deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : bd9350be970d8625588f2cefcda2416c0b77b5ee732fa7f2a60c947500ddac51

W112deg_laser.csv
sha256 : c65573c1efabeac0975b790d43b50904436b6eee87a6a0cf5b8ac058e112899f

W135deg_laser.csv
sha256 : 794bb004aa3e963ead6f56a744a508215135ea05d0cb6f69138d53f316a7ad12

W180deg_laser.csv
sha256 : d5f183b197cb9049f177ce15a4e2ddb008bce2f3fa667ffa7502386a61ceed8a

W112deg_tetrachloromethane_000-Information.txt
sha256 : b5d2ec97125069812cf8448a0e52e4e723d9d52fca5b61c462077f9128490f7f

W112deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : c5917f67ed4d8675b1fc71556990c5632bceb94a12b17fde72f330821864e325

W135deg_tetrachloromethane_000-Information.txt
sha256 : e93bce04a23fab04657da8624e3204c5050ec9fc7814723fa323d8b1c60bf384

W135deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : 8be9964bad1177fe7456ea5155582f2dc9b3e1a64aceccd281335aa64664c7e8

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W158deg_tetrachloromethane_000-Information.txt
sha256 : 57c265ef6beab80c55ec115f09bf81226240963c132b38cc874eba328cfc19a6

W158deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : 78e263ec12f89b085dd254cddc24555f9edc7cc8f6a12f71b1c869d59932fbf1

W180deg_tetrachloromethane_000-Information.txt
sha256 : 26b15d172a004d6a80e3c55acc4ad89f728a95dad3f236096ff3c1ccd2982d85

W180deg_tetrachloromethane_000_Spec.Data-1.txt
sha256 : b76db8084bf51ae97ab27a4f22f6a59689ead0a61ae24b14c31eda5fca51b177

W158deg_laser.csv
sha256 : dfdc5db44cbdf6f46966388d6508c3b0a49cbc6e766f84d56957042ace19fe1e

Unique eLabID: 20201124-c0725978b2a07946edc49b2ba94fa9307357fb7f
link : https://elab.ipht-jena.de/experiments.php?mode=view&id=79