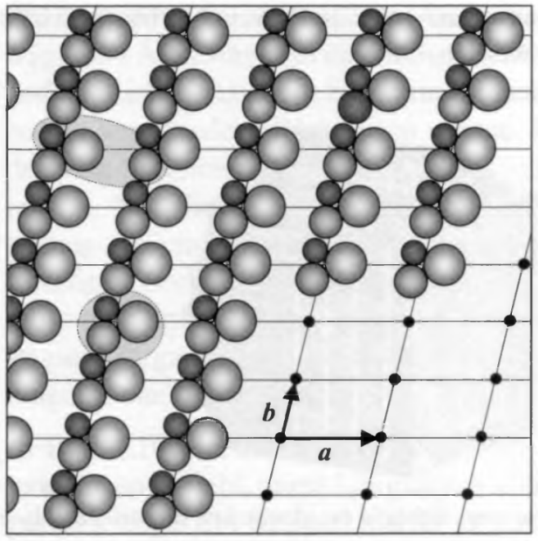
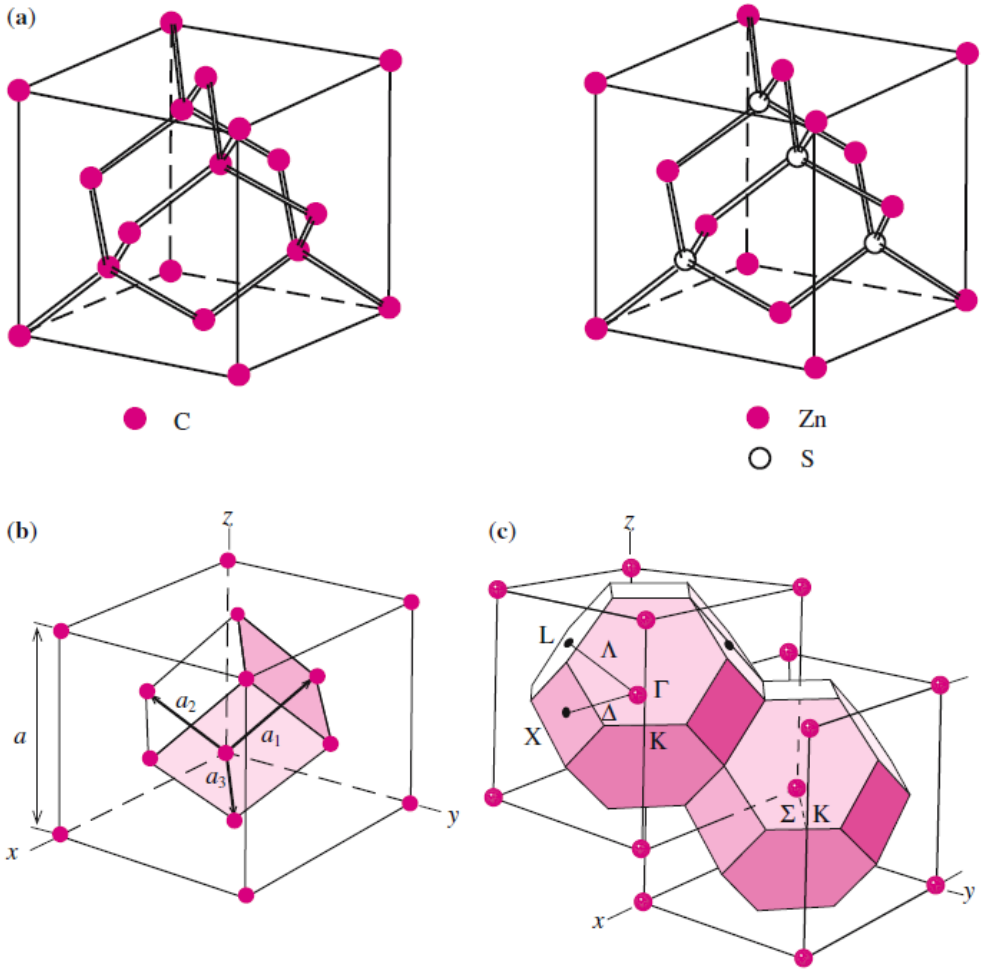
	10 to 12		2 to 4
1	Adem, Eshraq	1	Althoff, Jannis
2	Beyer, Paul	2	Cialone, Matteo
3	Breddin, Xenia Doreen	3	Fernandez Herrero, Analia
4	Buchmann, Jens	4	Köpping, Mario
5	Burchard, Katharina	5	Ludwig, Juliane
6	Christ, Marc Klaus	6	Sontheimer, Bernd
7	Dachkovski, Dennis	7	Ulonska, Stefan
8	Enslin, Johannes- Tobias	8	Waßerroth, Sören
9	Hartmann, Martin	9	Winta, Christopher Jeffrey
10	Kronfoth, Philipp	10	Yasin, Ula Mehsen Hummadi
11	Lang, Felix	11	de Azevedo Lopes, Amanda
12	Müller, Niclas	12	Prychynenko, Diana
13	Oddone, Valerio	13	Akay, Ömer
14	Ries, Maximilian	14	Grelich, Eugen
15	Schulze, Celina Seraphin	15	Quadt, Frank
16	Teucher, Markus	16	Skoultsos, Theodore
17	Tolksdorf, Daniel	17	Drescher, Lorenz
18	Wansleben, Malte Lauritz	18	Jaura, Ondrej
19	Yildiz, Mahir	19	Lotti, Francesco
20	Fioravanti, Federice	20	Przyrembel, Daniel
21	Brandstätter, Ron	21	Zamani, Ghazaleh
22	Zerbe, Antja	22	Timachi, Mohammad Hadi
23	Jay, Raphael	23	Jay, Raphael
24	Bomers, Mario		

Kristin Rammelkamp

Crystal structure

diamond & zincblende





Hunklinger, Yu & Cardona

Thanks for your answers!

Motivation

I want to take this course, because...
solid-state physics are awesome, I want to develop improved materials some day

I want to take this course, because... it fits well with ten other courses I'm having this semester and because I hope it will be better than atoms & molecules last semester :)

I want to take this course, because...

I am interested in boosting photovoltaic capibility & power in solar cells

Expectations

I absolutely want to hear about...

- theory + always a motivation why the "tools" are interesting and where you can apply them

How exactly can we gain and understand information about the crystal structure and properties of solids. Why do we use so many different techniques and which is for what?

I am interested in the experiments, not only in the theory.
So I feel insecure about the experimental parts, like interpret data to obtain info about the crystal.

Topics – aim high!

One effect, experiment, material, or phenomenon I want to be to explain after taking this course...

Quantum Hall Effect

Kondo - effect

Rashba - effect, topological insulators

- high - T_c - superconductivity ☺

Topics - I was impressed…

One effect, experiment, material, or phenomenon I want to be to explain after taking this course…

about nanostructers

maybe something about nano-tubes ?

I WOULD LIKE TO HAVE A DEEPER KNOWLEDGE ABOUT ALL NANO-MATERIAL, MOREOVER GRAPHENE, NANOWIRES.

Raman spectroscopy ;)

I absolutely want to hear about…

Double RRS, SERS

VOLUME 85, NUMBER 24 PHYSICAL REVIEW LETTERS 11 DECEMBER 2000

Double Resonant Raman Scattering in Graphite

C. Thomsen and S. Reich

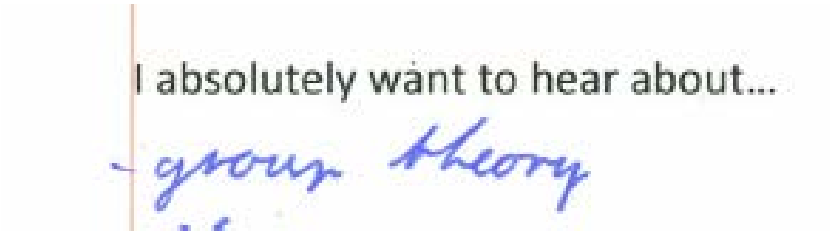
physik, Technische Universität Berlin, Hardenbergstrasse 36, 10623 Berlin, Germany

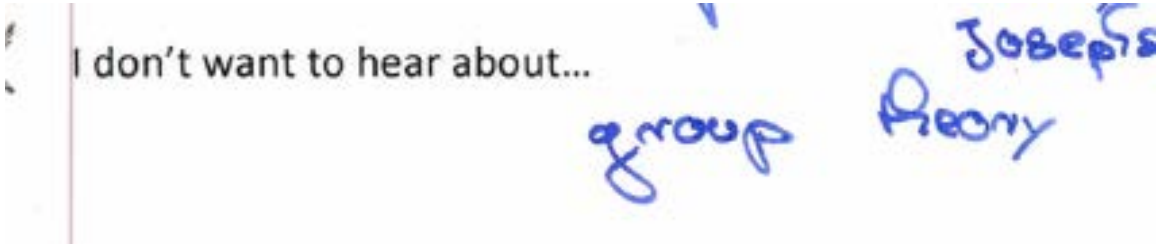
(Received 9 August 2000)

We find that the electronic dispersion in graphite gives rise to double resonant Raman scattering for excitation energies up to 5 eV. As we show, the curious excitation-energy dependence of the graphite *D* mode is due to this double resonant process resolving a long-standing problem in the literature and invalidating recent attempts to explain this phenomenon. Our calculation for the *D*-mode frequency shift (60 cm^{-1}/eV) agrees well with the experimental value.

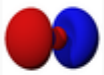
PACS numbers: 78.30.–j, 81.05.Tp

Good & bad news

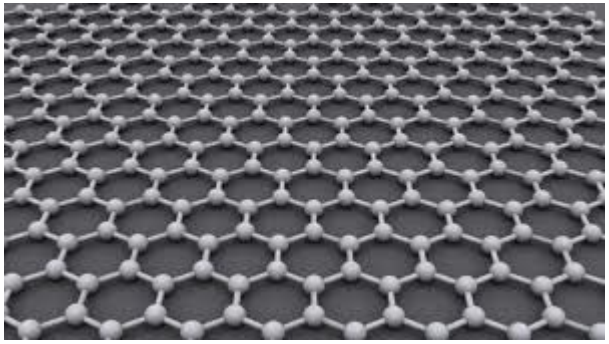


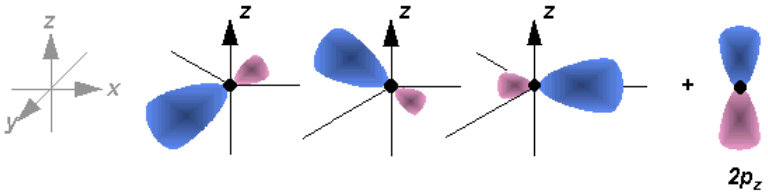


Atomic orbitals

	s ($\ell = 0$)	p ($\ell = 1$)			d ($\ell = 2$)					f ($\ell = 3$)						
	$m = 0$	$m = 0$	$m = \pm 1$		$m = 0$	$m = \pm 1$		$m = \pm 2$		$m = 0$	$m = \pm 1$		$m = \pm 2$		$m = \pm 3$	
	s	p_z	p_x	p_y	d_{z^2}	d_{xz}	d_{yz}	d_{xy}	$d_{x^2-y^2}$	f_{z^3}	f_{xz^2}	f_{yz^2}	f_{xyz}	$f_{z(x^2-y^2)}$	$f_{x(x^2-3y^2)}$	$f_{y(3x^2-y^2)}$
$n = 1$																
$n = 2$																
$n = 3$																
$n = 4$																
$n = 5$										...	...	...	...	...	...	...
$n = 6$					...	...	...	...	...	...	...	...	...	...	...	...
$n = 7$		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

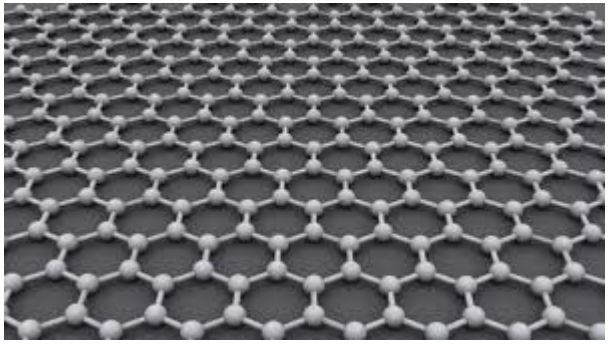
sp2 wave functions & symmetry

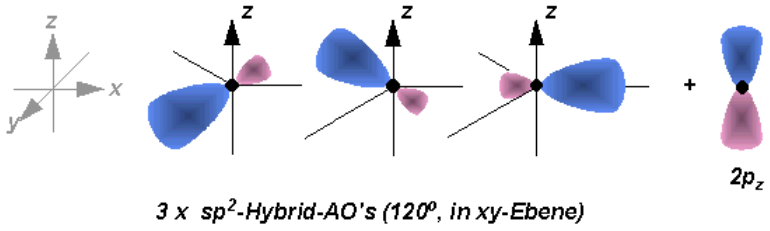




3 x sp^2-Hybrid-AO's (120^0, in xy-Ebene)

sp2 wave functions & symmetry





3 x sp^2-Hybrid-AO's (120°, in xy-Ebene)