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Article 7. Molecular Attributes of 'Revolution' Motion in Materials/

分子'公转'运动与材料的分子特性

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Atom is the most primitive material form of elementary particles; in our three-dimensional space, the motion model of elementary particles in atom can be simplified as the rotation of electrons around the nucleus, and the nuclei and electrons are the Yin and Yang poles of matter's magnetic properties respectively; at the same time, the magnetic line on the fourth dimension axis is perpendicular to the three-dimensional space. These magnetic elementary particles cut along the magnetic line on the fourth dimensional axis, thus generating electric charges. The existence of the electromagnetic induction theorem is the transmission pathway of driving force which leads electrons to rotate around the nucleus. The relative motion between positive and negative charged particles in the three-dimensional space produces a current effect. The current direction is perpendicular to the magnetic line on the fourth dimension axis, which is consequently similar to the principle of the motor coil rotation, and pushes the spin motion of the basic particle in the atoms; for molecules with poly-atomic aggregation form, the dark matter on the fourth dimensional axis as an energy binder polymerizes mono-atomic matter forming both Yin and Yang poles of the whole aggregated molecule [2], which makes the cutting motion on magnetic lines of the fourth axis, leading to 'the revolution movement'. Similarly, the matter in molecular structure makes "revolution" around the geometric center of the magnetic mass line in a molecule; by analogy, the transmission of driving force of both the earth's rotation and the revolution of other galaxies are generated by the electromagnetic induction theorem when the material properties of Yin and Yang poles in three-dimensional space are cutting against the fourth dimensional magnetic line. Further more, the higher the overall polarity in a molecule, the faster the angular velocity of molecules, and consequently the chemistry reaction is more active; moreover, the higher the ratio of total mass to total charge (M / E) in molecules, the slower the angular velocity of molecules, so the chemistry reaction is less active. This also provides the basis for the optimization of synthetic structure of polymers by 3D simulation of molecule movement.

Further discussion: compared with the electron, the radius between the proton and the rotation center in the nucleus is shorter, and the proton rotation speed is higher, so the energy flow intensity of electromagnetic wave is higher, and the transmission speed of

electromagnetic wave is faster. The refraction or diffraction of light is caused by the interference influences between the magnetic field on the obstacle surface and the polarity of light wave, which is different from mechanical wave. Therefore, different characteristics of materials with different magnetic field on the surface generates different light refraction or diffraction angles. This is also applicable on the other frequencies of electromagnetic wave. These findings provide basic characters for the synthesis of new materials. As discussed in Figure 1, the vertical red line represents the boundary between medium A (left) and medium B (right); magnetic field B in the medium A is vertical to the magnetic intensity curve (on the plane by axis y and z) of electromagnetic wave; electric field E in the medium A is vertical to the electric intensity curve (on the plane by axis x and z) of electromagnetic wave; in medium A, the transmission direction of electromagnetic wave V is parallel to axis z. Once the electromagnetic waves passes from medium A (left) into medium B (right), the direction of magnetic field B in medium B is different from it in medium A, so that the magnetic field B in medium B alters the transmission direction of electromagnetic wave V, making the magnetic field B in the medium B vertically to the magnetic intensity curve of electromagnetic wave in medium B. This is the mechanism of light refraction, which is also applicable on the light diffraction.

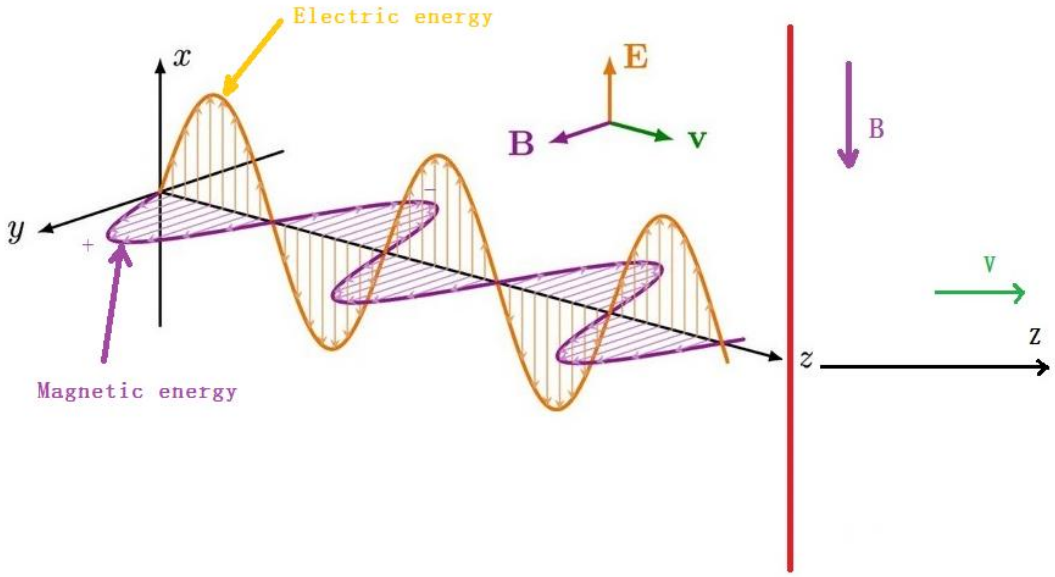

Figure 1. The mechanism of light refraction from medium A (left) to medium B (right) with the boundary of vertical red line between them.

This paper further discusses the electromagnetic wave principle of light reflection phenomenon: as proposed in my another article [3], the overall structure of an atom yields the effects of neutral shielding on the elementary particles inside the atoms. This neutral shielding effect is completely understandable: if the neutral shielding effect does not exist, when two atoms collide, the electrons of one atom are attracted by the nucleus of the other atom because of the Coulomb force, thus merging and

neutralization. This is obviously not the facts, so the existence of this neutral shielding effect can be proven inversely according to the fact. The shielding effect of both molecular structure [2] and the electronic orbitals [4] have also been discussed in my other papers. Therefore, this paper further deduces that the neutral shielding effect of the whole atomic structure is the electromagnetic wave principle of the light reflection phenomenon. The stronger the reflection effect of light on the surface of the object, the higher the neutral shielding capacity of the object atoms. In my quantum chemistry paper [4], it is to point out that the shielding effect of electronic orbits relative to adjacent orbitals is generated during spinning motion. Consequently, this paper further deduces that for the atoms of the same element in different molecular structures, because the electron orbitals forming chemistry bonds, molecular bond angle, bond energy and bond length vary among different molecular structures, even for the atoms of the same elements, the neutral shielding effect will be different in different molecular structures.

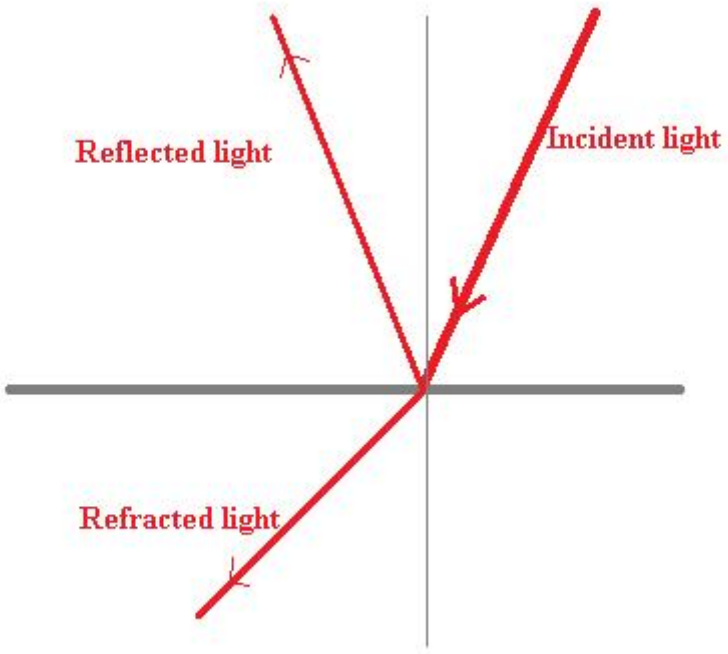

Figure 2. This figure illustrates the relations among incident light, reflected light, refracted light.

As shown in Fig 2, the incident light is divided into reflected light and refracted light after the incident light penetrates the surface of medium substance. If the neutral shielding effects generated by the atoms of medium substance is stronger, then the intensity of reflected light is stronger and the refracted light intensity is weaker correspondingly.

译文：原子是基本粒子最原始的物质形态；我们所在的三维空间中，原子中的基本粒子运动模型可以简化为电子围绕原子核做自转运动，原子核与电子为物质磁场属性的阴阳两极；与此同时，第四维度轴上的磁力线与三维空间垂直，阴阳两极基本粒子在第四维度轴的磁力线上做切割运动，从而产生了电荷。电磁感应定理的存在，是电子围绕原子核做自转运动的动力传输原理。三维空间中正负带电粒子相对运动产生电流效应，电流方向垂直于第四维度轴上的磁力线，从而类似于电动机线圈转动原理，推动基本粒子在原子内的自旋运动；对于多原子物质聚合形态的分子，在第四维度轴上的暗物质作为能量粘合剂聚合了单原子物质并且形成整个分子的阴阳两极[2]，使得三维空间分子结构中的阴阳极性在第四维度轴上的磁力线的切割运动，进行着“公转”运动。相似的，分子结构中的物质围绕整体分子的质量磁力线的几何中心做“公转”运动；余此类推，地球自转和其它星系公转运动的动力传输原理，都是三维空间中的阴阳两极物质属性与第四维度磁力线做切割运动时电磁感应定理产生。因此，分子中整体极性越高，分子旋转角速度越快，化学反应特性越活跃；不仅如此，分子中的总质量与总体电荷量的比值（M/E）越高，分子旋转角速度越慢，化学反应特性较不活跃。这为通过 3D 模拟优化高分子化合物提供了依据。

进一步论述：与电子相比，原子核中质子与自转中心之间的半径更小，质子自转角速度更高，因此产生的电磁波能量流密度更大，电磁波传播速率更快。光的折射或是衍射现象是由于障碍物表面磁场与光波极性的干涉作用产生的，这与机械波不同。因此不同特性的材料由于表面磁场不同会产生不同的光的折射或是衍射角度。这种特性对于其它频率电磁波的折射或是衍射也同样适用。这些发现将为新材料研发提供了基础特性。如图 1 所述，垂直红线表示介质 A（左边）与介质 B（右边）之间的边界。介质 A 中的磁场 B 垂直于电磁波的磁场强度曲线（在 y-z 轴构成的平面上），介质 A 中的电磁 E 垂直于电磁波的电场强度曲线（在 x-z 轴构成的平面上），在介质 A 中电磁波 V 的传播方向与 Z 轴平行。一旦电磁波 V 从介质 A（左）穿透至介质 B（右），在介质 B 中的磁场 B 的方向不同于介质 A 中的磁场 B 方向，因此介质 B 中磁场 B 更改了电磁波 V 的传播方向，使得介质 B 中的磁场方向与介质 B 中传播的电磁波 V 相互垂直。此类光的折射原理同样适用于光的衍射。

本文进一步探讨光反射现象的电磁波原理：本人在另一篇期刊论文中论述了原子的整体结构对原子内部的基本粒子产生了中性屏蔽作用[3]。这种中性屏蔽作用是完全可以理解的：如果中性屏蔽作用不存在，则两个原子之间发生碰撞时候，其中一个原子的电子就会因为库仑力的作用与另一个原子的原子核相吸引，从而合并而中和。这与事实明显不符，所以可以反证出这种中性屏蔽作用的存在。本文在其它论文中也已经探讨了分子结构[2]和电子轨道[4]的屏蔽作用。因此，本文进一步推断，原子整体结构的中性屏蔽作用是光的反射现象的电磁波原理。光在物体表面的反射效应越高，反映出物体原子的中性屏蔽能力越高。本人在量子化学一文中[4]，描述了电子轨道相对于相邻轨道产生屏蔽作用。因此本文进一步推导出对于同类元素的原子在不同分子结构中，由于形成化学键的电子轨道、分子键键角、键能、键长都会由于分子结构的差异而不同，所以即使是同类元素的原子，在不同分子结构中产生的中性屏蔽作用都会相异。

图 2 例举说明了入射光、反射光、折射光三者关系。当入射光穿透介质表面之后，入射光可以被分成折射光和反射光。如果介质物质的原子产生中性屏蔽作用越强，则反射光光强越大，折射光光强相应越弱。

Please note: This is the revised materials in book “Proceedings for Degree of Postgraduate Diploma in Environmental Science (3rd Edition).” published in 2016. Revised on 31/12/2020. This journal article is previously published as: Liu Huan. (2021). Molecular Attributes of 'Revolution' Motion in Materials. Journal of Environment and Health Science (ISSN 2314-1628), which is converted into Journal of Quantum Physics and Materials Chemistry (ISSN2958-4027) . Both Journals belong to the same publisher, Liu Huan. The previous journal article is closed to the public, but the previous reference is still valid. Latest revised on 19/05/2023; 20/05/2023;25/05/2023; 05/06/2023; 25/02/2024; 26/02/2024.

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