

Zeitschrift: Helvetica Physica Acta
Band: 31 (1958)
Heft: VI

Artikel: On pressure dependence of proton magnetic resonance shift
Autor: Bhar, B.N.
DOI: <https://doi.org/10.5169/seals-112925>

Nutzungsbedingungen

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. [Siehe Rechtliche Hinweise.](#)

Conditions d'utilisation

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. [Voir Informations légales.](#)

Terms of use

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. [See Legal notice.](#)

Download PDF: 21.12.2024

ETH-Bibliothek Zürich, E-Periodica, <https://www.e-periodica.ch>

On Pressure Dependence of Proton Magnetic Resonance Shift

by **B. N. Bhar**

Physics Department, Al-Hikma University of Baghdad, Iraq

(7. V. 1958)

The experimental observation by OGG¹) of the displacement of proton magnetic resonance line of water due to change of state—from liquid to vapour phase—as described in this journal under the heading 'High resolution proton magnetic resonance in water and concept of Hydrogen bonding' needs some comment and elucidation in the light of the suggestion previously put forward by us about the pressure dependence of proton 'chemical shift' in nuclear magnetic resonance phenomenon²).

In a communication elsewhere²) we have developed the idea that in all compounds endowed with the property of molecular association by virtue of hydrogen bonding, the proton resonance in the vapour phase would occur at a higher value of the externally applied magnetic field than that in the liquid phase. This statement was made considering the liquid to be a 'highly compressed gas' in the light of the continuity of state of matter. The experimental observation by OGG of the shift of proton resonance line from liquid and vapour state of water, with the proton resonance in the vapour state falling at a higher value of the externally applied magnetic field, seems to be just in agreement with our suggestion.

OGG has stated that the displacement of proton resonance line in vapourised water from liquid water was greater compared to the case of gaseous and liquid ammonia. It is stated that in the former case the shift was 150 cycles per second and in the latter case it was 50 cycles per second at 30 megacycles nuclear magnetic resonance spectrometer. But in such cases of quantitative comparison of shifts the measurement in gaseous phase should be made with equivalent amounts of the substances under the same pressure and temperature in the light of our proposition of pressure dependence of proton magnetic resonance shift.

Literature

¹) R. A. OGG, *Helv. Phys. Acta*, **30**, 89 (1957).

²) B. N. BHAR, *J. Chem. Phys.*, **23**, 1972 (1955).