CHEMICAL PROPERTIES OF SOME SMALL METAL-CONTAINING MOLECULES, DETERMINED USING FOURIER TRANSFORM MICROWAVE SPECTROSCOPY

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A review will be presented of our work in the Fourier transform microwave spectroscopy of small metal-containing molecules generated via laser ablation. This combination of high resolution spectroscopy with a simple preparation technique has proved excellent for characterizing a variety of metal compounds, some of which had been elusive, and others of which had been unanticipated. In addition, the high precision of the technique has allowed the effect of nuclear size to reveal routinely a long-neglected electronic structural parameter. Several examples will be cited, including noble gas and other complexes of coinage metal halides. The examples strongly confirm the continuing value of microwave rotational spectroscopy in chemistry.