

FAST GAS-PHASE CHEMISTRY EXPERIMENTS WITH HEAVIEST GROUP 13 ELEMENTS

Steinegger P.,^a Aksenov N.V.,^a Albin Yu.V.,^a Bozhikov G.A.,^a Chepigin V.I.,^a Chuprakov I.,^a Eichler R.,^b Gall B.,^c Gustova N.S.,^a Herrmann, D.,^b Ionescu P.,^b Isaev A.V.,^a Katrasev D.E.,^a Kraus, B.,^b Madumarov A.Sh.,^a Malyshev O.N.,^a Piguet D.,^b Popov Yu.A.,^a Sabelnikov A.V.,^a Sato T.K.,^d Svirikhin A.I.,^a Voronyuk M.G.,^a Yeremin A.V.,^a Asfari Z.,^c and Dmitriev S.N.^a

^a *Flerov Laboratory of Nuclear Reactions, Joint Institute for Nuclear Research,
Joliot-Curie 6, Dubna, 141980, Russia,
e-mail: steinegger@jinr.ru*

^b *Paul Scherrer Institute, 5232 Villigen PSI, Switzerland*

^c *Université de Strasbourg, CNRS, IPHC UMR 7178, 67000 Strasbourg, France*

^d *Advanced Science Research Center, Japan Atomic Energy Agency, Tokai, Naka, Ibaraki 319-1195, Japan*

The physico-chemical characterization of all members of the periodic table of elements is a core discipline of chemistry and natural sciences in general. It was what enabled D.I. Mendeleev to define the structure of the periodic table as we know it today, 150 years ago. Since then, a number of new elements have been added to the table. Today, the 7th period was recently completed,¹ and we are on the verge of opening up the next one. The question arises, if Mendeleev's main structural principle of chemical periodicity even holds for these heaviest additions.

In recent years, the chemical characterizations of copernicium (Cn, $Z=112$) and flerovium (Fl, $Z=114$) in their elemental states were carried out using fast gas-phase adsorption chromatography experiments.²⁻⁴ While these efforts are still on-going, the focus started to shift toward a thorough assessment of nihonium (Nh, $Z=113$).⁵⁻⁶ Here, we present online chemistry investigations of the lighter homolog of nihonium, i.e., thallium (Tl, $Z=81$), at the U400 accelerator facility of the Flerov Laboratory. Furthermore, prospects for an anew chemistry experiment with nihonium will be discussed.

References

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