

On the Preparation of Zirconium Glutarate Gels

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In continuation of our previous work¹⁻⁵ on the preparation of several new metal-*organo* gels, we have now been able to prepare transparent and stable gels of zirconium glutarate by metathesis of sodium glutarate and zirconium nitrate solutions under controlled conditions.

By mixing 1.20 to 1.55 ml of *M*/5 sodium glutarate and 2.0 ml of *M*/5 zirconium nitrate in a total volume of 5.0 ml, the gelling time ranged from 120 to 436 mins. at a bath temperature of 35° (Table I).

TABLE I

Relation between the amount of glutarate and the gelling time.

M/5-Zr(NO₃)₄=2.0 ml. Total volume=5.0 ml.

<i>M</i> /5 Na-glutarate (ml)	1.55	1.50	1.45	1.40	1.35	1.30	1.25	1.20
Gelling time (min.)	120	156	179	221	260	316	371	436

Dioxan has a sensitising effect and in its presence the gelling time is considerably reduced (Table II).

TABLE II

Relation between the amount of dioxan present and the gelling time.

M/5-Zr(NO₃)₄=2.0 ml. *M*/5 Sodium glutarate= 1.5 ml. Total volume=5.0 ml.

Dioxan (ml)	0.1	0.3	0.5	0.7	0.9	1.1	1.3
Gelling time (min.)	155	140	144	139	134	131	127

Measurement of the H⁺-ion concentration of the gel-forming mixture shows that zirconium glutarate gels are obtained at the pH range 2 to 2.3, establishing the acidic nature of the gels.

1. Prekaash and Mushran, *Nature*, 1949, 163, 240.
2. Mushran, *Curr. Sci.*, 1949, 18, 247.
3. Bose and Mushran, *ibid.*, 1957, 26, 47.
4. Upadhye and Mushran, *Naturwiss.*, 1958, 45, 514.
5. Agarwal and Mushran, *this Journal*, 1962, 38, 343.

Precipitation of the insoluble metal glutarate takes place when the glutarate/metal ratio becomes 1:1. Gelation takes place in the region which is much earlier than the precipitation ratio.

Further work on these gels, viz., the gel-strength determination, is in progress.

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