

GLITSIN ASOSIDAGI SHIFF ASOSI Cu(II) VA Ni(II) KOMPLEKSLARINING
IQ-SPEKTROSKOPIK TAHLILI

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ANNOTATSIYA:

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KALIT SO'ZLAR:

Cu(II) kompleksi,
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glitsin, Shiff asosi, IQ-
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birikmalar, azometin,
karboksilat guruhi.

Mazkur tadqiqotda benzatsetofenon va glitsin asosida sintez qilingan Shiff baza ligandlarining Cu(II) va Ni(II) komplekslari IQ-spektroskopiya usuli yordamida o'rganildi. Erkin ligandlarda $\nu(\text{C}=\text{N})$ azometin guruhi tebranishi 1635 cm^{-1} da kuzatilgan bo'lsa, kompleks hosil bo'lgach ushbu signal $1608\text{--}1612\text{ cm}^{-1}$ sohasiga siljishi koordinatsiyaning azometin azoti orqali amalga oshganligini ko'rsatdi. Komplekslarda $\nu_{\text{as}}(\text{COO}^-)$ va $\nu_{\text{s}}(\text{COO}^-)$ tebranishlarining paydo bo'lishi karboksilat guruhining xelatlovchi bidentat koordinatsiyasini tasdiqladi. Shuningdek, uzoq IQ-sohada $\nu(\text{M}-\text{N})$ va $\nu(\text{M}-\text{O})$ tebranishlarining kuzatilishi metall-ligand bog'lari hosil bo'lganligini ko'rsatdi. Spektroskopik natijalar asosida Cu(II) va Ni(II) komplekslari tridentat koordinatsiyalangan monoyadroli komplekslar ekanligi aniqlandi.

Erkin BAsC va BPG ligandlarining IQ-spektrlarida $\nu(\text{C}=\text{N})$ azometin guruhi valent tebranishlari 1635 cm^{-1} da kuchli signal sifatida kuzatildi. Metall ionlari bilan kompleks hosil bo'lgach ushbu signal $1608\text{--}1612\text{ cm}^{-1}$ sohasiga siljidi. Ushbu batoxrom siljish azometin azot atomining metall markaziga donorlik qilishi natijasida C=N bog' tartibining kamayishi bilan izohlanadi. Kuzatilgan $\Delta\nu$ qiymatlari amino kislotalar asosidagi tridentat Shiff baza komplekslari uchun xos hisoblanadi.

[1-rasm uchun joy]

1-rasm. BAsC ligandi va $[\text{Cu}(\text{BAsC})_2] \cdot 2\text{H}_2\text{O}$ kompleksining IQ-spektri.

Erkin ligandlarda $1689\text{--}1720\text{ cm}^{-1}$ sohada kuzatilgan $\nu(\text{C}=\text{O})$ tebranishlari komplekslarda yo'qolib, uning o'rniga $\nu_{\text{as}}(\text{COO}^-)$ va $\nu_{\text{s}}(\text{COO}^-)$ tebranishlariga mos ravishda $1590\text{--}1596\text{ cm}^{-1}$ hamda $1418\text{--}1425\text{ cm}^{-1}$ diapazondagi yangi signallar paydo bo'ldi. $\Delta\nu$ qiymatlarining $165\text{--}178\text{ cm}^{-1}$ oralig'ida bo'lishi karboksilat guruhining xelatlovchi bidentat koordinatsiyasini ko'rsatadi.

$3300\text{--}3500\text{ cm}^{-1}$ sohada kuzatilgan keng O-H/N-H tebranishlari komplekslarda $3080\text{--}3380\text{ cm}^{-1}$ sohasiga siljib, koordinatsiyalangan suv molekullari va vodorod bog'lari mavjudligini tasdiqladi. Bundan tashqari, uzoq IQ-sohada Cu(II) komplekslari uchun $\nu(\text{M}-$

$\nu(\text{C}=\text{N})=512 \text{ cm}^{-1}$ va $\nu(\text{M}-\text{O})=445 \text{ cm}^{-1}$, Ni(II) komplekslari uchun esa mos ravishda 535 va 468 cm^{-1} tebranishlar kuzatildi. Ushbu signallar metall–ligand koordinatsion bog‘lari hosil bo‘lganligini tasdiqlaydi.

[2-rasm uchun joy]

2-rasm. Cu(II) va Ni(II) komplekslarining uzoq IQ-spektrlarida $\nu(\text{M}-\text{N})$ va $\nu(\text{M}-\text{O})$ tebranishlari.

1-jadval

Shiff baza ligandlari va ularning Cu(II)/Ni(II) komplekslarining IQ-spektral ma’lumotlari

Tebranish turi	BASc ligandi	BPG ligandi	Cu(II) kompleksi	Ni(II) kompleksi
$\nu(\text{C}=\text{N})$	1635	1635	1608	1612
$\nu_{\text{as}}(\text{COO}^-)$	–	–	1590	1596
$\nu_{\text{s}}(\text{COO}^-)$	–	–	1425	1418
$\nu(\text{M}-\text{N})$	–	–	512	535
$\nu(\text{M}-\text{O})$	–	–	445	468

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