

VISMUT YODIDDAN VISMUT OKSIODIDLARIGA FAZAVIY O'TISH HAVODA TERMİK ISHLOV BERISHNING HARORATI VA VAQTINI O'ZGARTIRISH ORQALI O'RGANISH

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Annotatsiya: Odatdagi oqava suvlarni tozalash usullari turli antiviral preparatlarni va chiqindi suvdan paydo bo'ladigan ifloslantiruvchi moddalarni olib tashlashda unchalik samarali emasligi aniqlandi. Ilg'or oksidlanish jarayoni sifatida, geterogen fotokataliz, engil ish sharoitlari va samaradorligi tufayli bunday suvni ifloslantiruvchi moddalarni zararsizlantirishni ko'rsatadi.

Kalit so'zi: Vismut yodid, trigonal, panjara parametrlari, termik ishlov berish, tetragonal.

Аннотация: Было обнаружено, что традиционные методы очистки сточных вод менее эффективны в удалении различных противовирусных препаратов и загрязнителей из сточных вод. Было показано, что гетерогенный фотокатализ, являющийся передовым процессом окисления, нейтрализует такие загрязнители воды благодаря мягким условиям эксплуатации и эффективности.

Ключевое слово: Йодид висмута, тригональ, параметры решетки, термическая обработка, тетрагональ.

Abstract: Conventional wastewater treatment methods have been found to be less effective in removing various antiviral drugs and pollutants from wastewater. As an advanced oxidation process, heterogeneous photocatalysis has been shown to neutralize such water pollutants due to its mild operating conditions and efficiency.

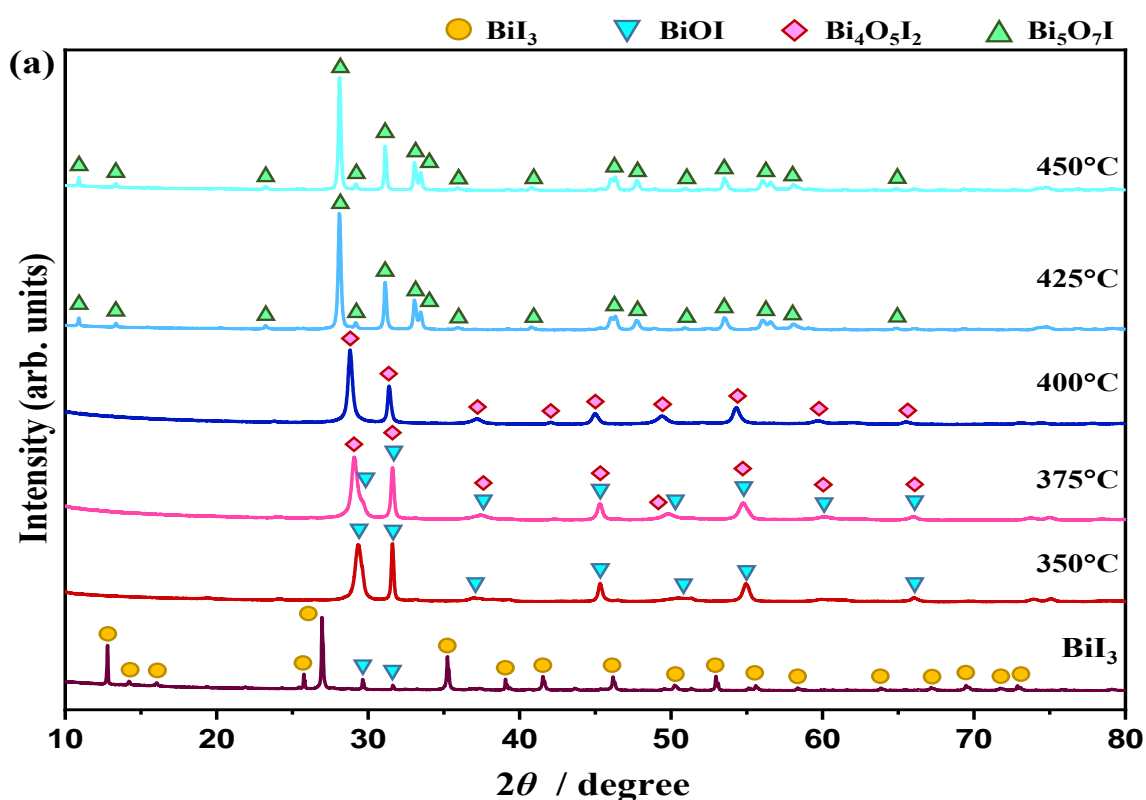
Keyword: Vismuth iodide, trigonal, lattice parameters, thermal processing, tetragonal.

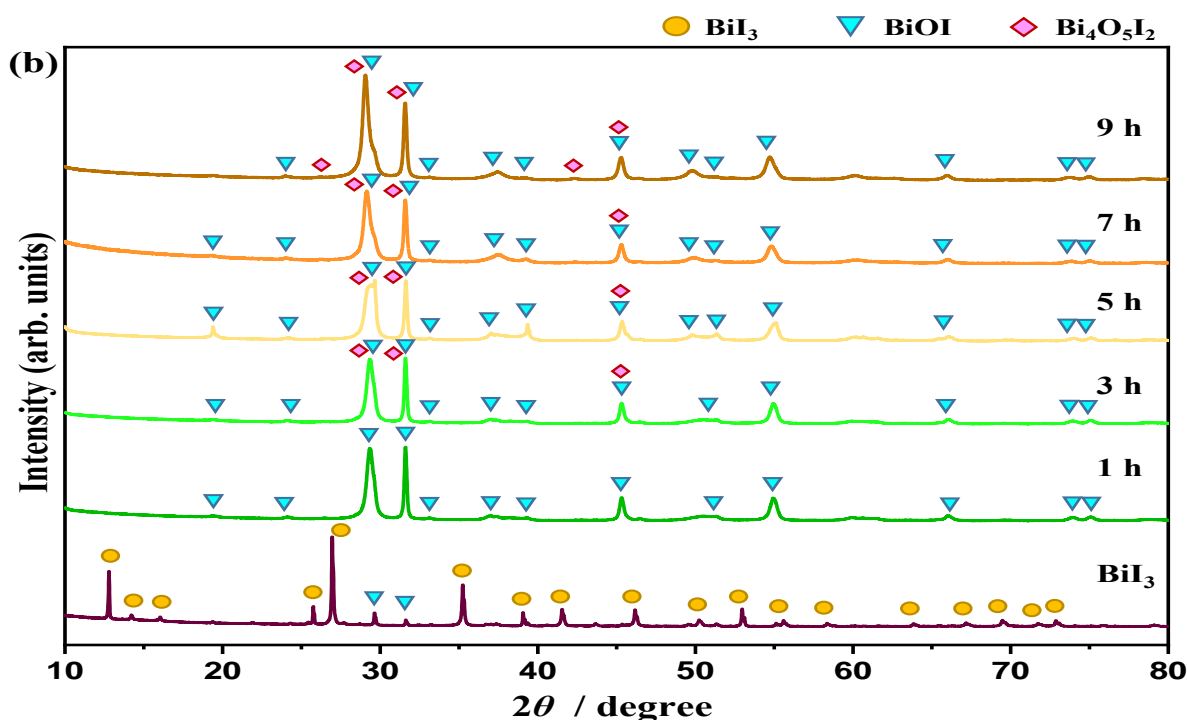
Vismut yodiddan vismut oksiodidlariga fazaviy o'tish havoda termik ishlov berishning harorati va vaqtini o'zgartirish orqali o'rganildi.[1] 1a-rasmda 1 soat davomida 350°C dan 450°C gacha bo'lgan haroratlarda termal ishlov berilgan namunalarning XRD namunalari ko'rsatilgan. Qabul qilingan vismut yodidining XRD namunasi R $\bar{3}$ bo'shliq guruhi va $a = 7,5250 \text{ \AA}$, $b = 7,5250 \text{ \AA}$ va $c = 20,7030 \text{ \AA}$ (ICSD# 98-007-8791) panjara parametrlari bilan BiI $\bar{3}$ trigonaliga birikishi mumkin bo'lgan asosiy uslublarni ko'rsatadi. Bundan tashqari, P4/nmm bo'shliq guruhi va $a = 3,9950 \text{ \AA}$, $b = 3,9950 \text{ \AA}$ va $c = 9,1510 \text{ \AA}$ (ICSD # 98-039-1354) panjara parametrlari bilan

tetragonal BiOIga tegishli kichik aks ettirishlar ham kuzatiladi. 350°C da tetragonal BiOI yodning bug'lanishi va oksidlanish natijasida dominant kristal fazaga aylanadi.[2] P1211 kosmik guruhi va $a = 11,2630 \text{ \AA}$, $b = 5,6980 \text{ \AA}$ va $c = 14,9440 \text{ \AA}$ (ICSD # 98-041-2590) panjara parametrlariga ega monoklinik $\text{Bi}_4\text{O}_5\text{I}_2$ tetragonal BiOIga aylantirilgan namunaga 375°C termik ishlov beriladi va 400°C da hukmron kristall fazaga aylanadi. 425°C va 450°C,da monoklinik $\text{Bi}_4\text{O}_5\text{I}_2$ bilan bog'liq akslar butunlay yo'qoladi va I Ibca bo'shliq guruhi va panjara parametrlari $a = 5.3440 \text{ \AA}$, $b = 16.2650 \text{ \AA}$ va $c = 23.0200 \text{ \AA}$ (ICSD# 98-041-1666) bo'lgan ortorombik $\text{Bi}_5\text{O}_7\text{I}$ ga tegishli yangi akslar yo'qoladi. 1b-rasmdagi XRD naqshlari 350°C da termik ishlov berish vaqtini 1 soatdan 9 soatgacha o'zgartirish trigonal BiI_3 dan birinchi navbatda tetragonal BiOI ga, so'ngra monoklinik $\text{Bi}_4\text{O}_5\text{I}_2$ ga faza o'tishga olib kelganligini tasdiqlaydi.[3] Ko'rinib turibdiki, termik ishlov berish haroratining o'zgarishi termal ishlov berish vaqtidagi o'zgarishlarga qaraganda fazaviy o'tishga kuchli ta'sir ko'rsatdi. Oldingi tadqiqotlar shuni ko'rsatdiki, BiI_3 ning Bi_2O_3 ga oksidlovchi konversiyasi $\text{Bi}_4\text{O}_5\text{I}_2$ (va BiOI)²⁰ yoki $\text{Bi}_5\text{O}_7\text{I}$ (va BiOI), hosil bo'lishi orqali sodir bo'lgan, lekin ikkalasi ham emas. Bu erda termal ishlov berish haroratini nazorat qilish orqali BiI_3 ning oksidlovchi konversiyasi quyidagi bosqichlarga muvofiq davom etdi:



BiOI, $\text{Bi}_4\text{O}_5\text{I}_2$, va $\text{Bi}_5\text{O}_7\text{I}$ fazalarining shakllanishi nitazoksanidning fotokatalitik degradatsiyasi samaradorligiga har bir kristal fazaning hissasini tushunishga imkon beradi.[4]





1-rasm. 350°C dan 450°C gacha bo'lgan haroratlarda 1 soat (a) va 350°C da 1-9 soat (b) havoda termik ishlov berilgan namunalarning XRD namunalari.

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